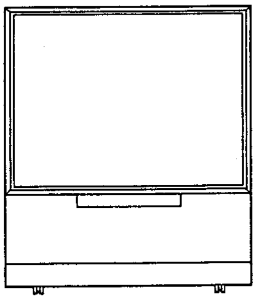
PIONEER®
The Art of Entertainment

Service Manual



ORDER NO.
ARP2759

PROJECTION MONITOR RECEIVER
SD-P5071-K
SD-P5071-Q
SD-P4571-K
SD-P4571-Q

SD-P5071-K, SD-P5071-Q, SD-P4571-K AND SD-P4571-Q HAVE THE FOLLOWING :

Type	Model					Power Requirement	Remarks
	SD-P5071-K	SD-P5071-Q	SD-P4571-K	SD-P4571-Q	SD-P457-Q		
KUX1C	○	○	○	○	○	AC120V only	
KCX1C	–	–	○	–	–	AC120V only	

- This manual is applicable to the following : SD-P5071-K/KUX1C and SD-P5071-Q/KUX1C; SD-P4571-K/KUX1C and SD-P4571-Q/KUX1C.
- For the following : SD-P5071-Q/KUX1C and SD-P4571-Q/KUX1C, refer to page 148.
- For the other type(s), refer to the applicable service manual(s).
- SD-P5071-Q is the same as SD-P5071-K except for color.
- SD-P4571-Q is the same as SD-P4571-K except for color.

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This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.
Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING
Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health & Safety Code, Section 25249.5).
When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale any smoke or fumes produced.

NOTICE
(FOR CANADIAN MODEL ONLY)
Fuse symbols ▬⊞ (fast operating fuse) and/or ▬⊠ (slow operating fuse) on PCB indicate that replacement parts must be of identical designation.

REMARQUE
(POUR MODÈLE CANADIEN SEULEMENT)
Les symboles de fusible ▬⊞ (fusible de type rapide) et/ou ▬⊠ (fusible de type lent) sur CCI indiquent que les pièces de remplacement doivent avoir la même désignation.

1. SAFETY PRECAUTIONS

NOTICE:Comply with all cautions and safety related notes located on or inside the cabinet and on the chassis or picture tube.
The following precautions should be observed:

1. Do not install, remove, or handle the picture tube in any manner unless shatterproof goggles are worn. People not so equipped should be kept away while picture tubes are handled.
   Keep picture tube away from the body while handling.
2. When service is required, even though the PROJECTION MONITOR RECEIVER an isolation transformer should be inserted between power line and the set in safety before any service is performed.
3. When replacing a chassis in the set, all the protective devices must be put back in place, such as barriers, nonmetallic knobs, adjustment and compartment covershields, isolation resistor-capacitor, etc.
4. When service is required, observe the original lead dress.
   Extra precaution should be taken to assure correct lead dress in the high voltage circuitry area.
5. Always use the manufacturer's replacement components.
   Especially critical components as indicated on the circuit diagram should not be replaced by other manufacture's.
   Furthermore where a short circuit has occurred, replace those components that indicate evidence of overheating.
6. Before returning a serviced set to the customer, the service technician must thoroughly test the unit to be certain that it is completely safe to operate without danger of electrical shock, and be sure that no protective device built into the set by the manufacturer has become defective, or inadvertently defeated during servicing.

Therefore, the following checks should be performed for the continued protection of the customer and service technician.

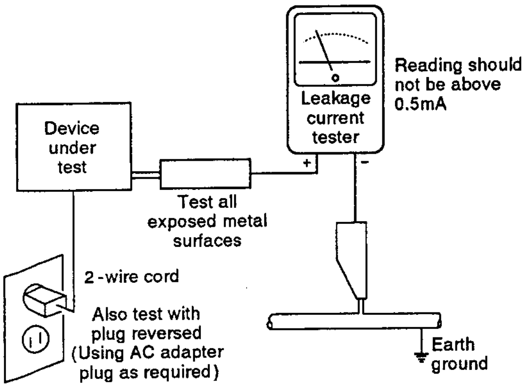
Leakage Current Cold Check

With the AC plug removed from the 120V AC 60Hz source, place a jumper across the two plug prongs. Turn the AC power switch on. Using an insulation tester(DC 500V), connect one lead to the jumpered AC plug and touch the other lead to each exposed metal part(input/output terminals, screwheads, metal overlays, control shafts, etc.), particularly any exposed metal part having a return path to the chassis. Exposed metal parts having a return path to the chassis should have a minimum resistor reading of 0.3MΩ and a maximum resistor reading of 5MΩ . Any resistor value below or above this range indicates an abnormality which requires corrective action. Exposed metal parts not having a return path to the chassis will indicate an open circuit.

Leakage Current Hot Check

Plug the AC line cord directly into a 120V AC 60Hz outlet (do not use an isolation transformer for this check). Turn the AC power switch on.

Using a "Leakage Current Tester(Simpson Model 229 equivalent)", measure for current from all exposed metal parts of the cabinet(input/output terminals, screwheads, metal overlays, control shaft, etc.), particularly any exposed metal part having a return path to the chassis, to a known earth ground(water pipe, conduit, etc.). Any current measured must not exceed 0.5mA.


Reading should not be above 0.5mA
Leakage current tester
Device under test
+
-
Test all exposed metal surfaces
2-wire cord
Also test with plug reversed (Using AC adapter plug as required)
Earth ground

AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE SET TO THE CUSTOMER.

High Voltage

This set is provided with a X-ray protection for clearly indicating that voltage has increased in excess of a predetermined value. Comply with all notes described in this Service Manual regarding this hold down circuit when servicing, so that this X-ray protection may correctly be operated.

Serviceman Warning

In the status of the black picture(video muting is being applied)when no signal is input, high voltage of this set during operation is less than 30.9kV. In case any component having some relation to the high voltage is replaced, confirm that the high voltage is lower than 30.9kV in the status of the black picture when no signal is input.

To measure H.V. use a high impedance H.V. meter.

Connect (-) to earth and (+) to the FBT anode cable connector.

(Refer to page 102.)

X-radiation

TUBE:The primary source of X-radiation in this set is the picture tube.

For continued X-radiation protection, the replacement tube must be the same type as the original, PIONEER approved type.

The picture tube(CRT assembly R, G, B)used in this set holds complete guarantee against X-ray radiation when the X-ray is sealed(See on page 5). Accordingly, when the current in flowing to the picture tube(CRT assembly R, G, B), be sure to perform it by putting the tube into X-ray sealed applied state. Avoid absolutely to flow the current to the picture tube(CRT assembly R, G, B)itself. Moreover, when the voltage of the high voltage circuit becomes abnormally a little higher, the picture tube radiates X-rays. Accordingly, when servicing the high voltage circuit be sure to replace as an assembly with the POWER SUPPLY assembly in the manner in which has been adjusted to perform normal operation.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in PIONEER set have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.

The use of a substitute replacement component which does not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, X-radiation, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

3. CHARGED SECTION, HIGH VOLTAGE GENERATING POINT AND X-RAY PROTECTION

■ Charged section

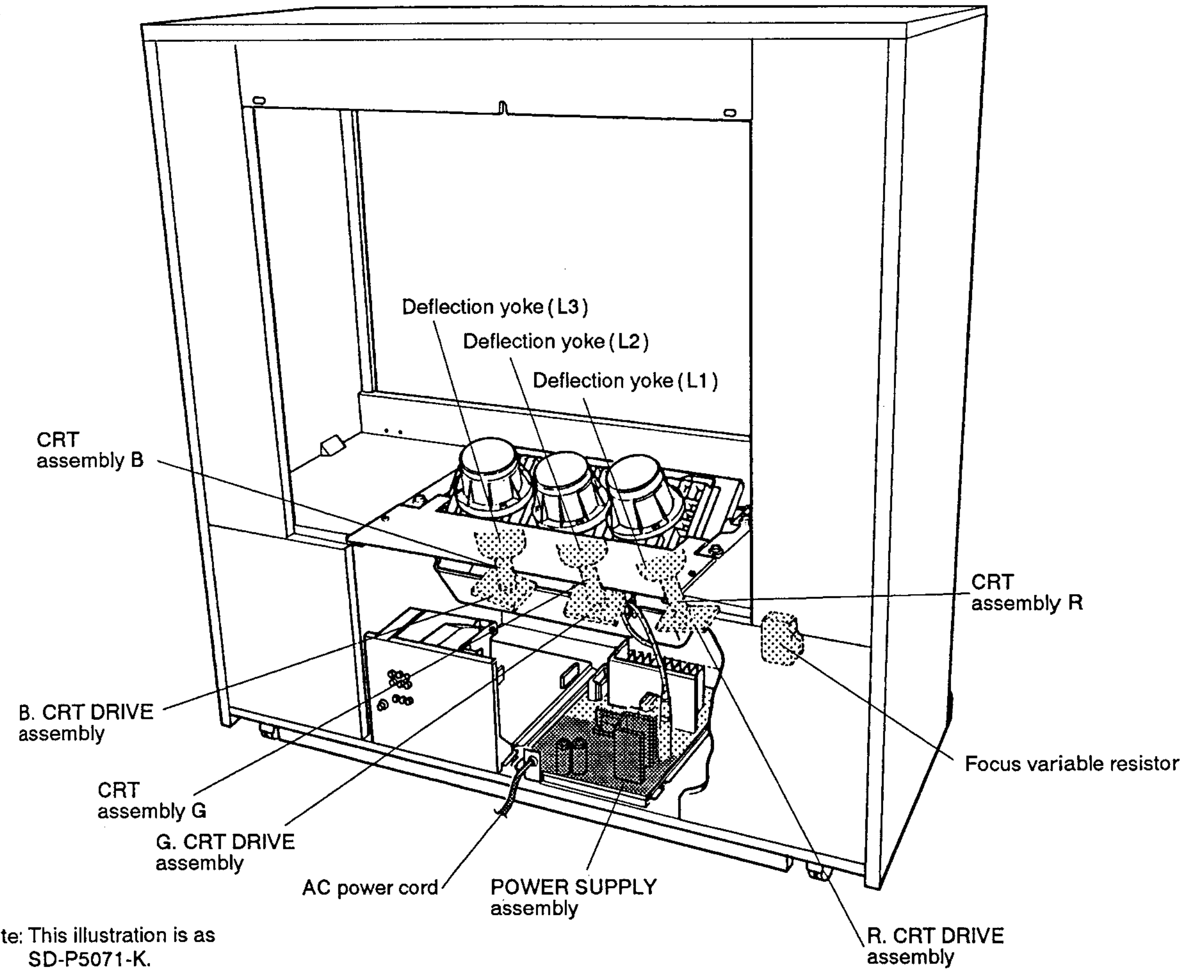
The circuit in which the commercial AC power is used as it is without passing through the power supply transformer. If the charged section is touched, there is a risk of electric shock. In addition, the measuring equipment can be damaged if it is connected to the GND of the charged section and the GND of the non-charged section while connecting the set directly to the commercial AC power supply. In this case, be sure to connect the set via an insulated transformer and supply the current.

■ Charged section (Power supply primary side)

1. The primary side of the POWER SUPPLY assembly
2. AC power cord

▨ part is the charged section.

░ part is the high voltage generating points other than the charged section.


Deflection yoke (L3)
Deflection yoke (L2)
Deflection yoke (L1)
CRT assembly B
CRT assembly R
B. CRT DRIVE assembly
Focus variable resistor
CRT assembly G
G. CRT DRIVE assembly
AC power cord
POWER SUPPLY assembly
R. CRT DRIVE assembly

Note: This illustration is as SD-P5071-K.

Fig. 3-1 Charged section and high voltage generating point

High voltage generating point

The place where voltage of over 100V is generated.

1. Charged section	
2. POWER SUPPLY assembly (including FBT)	(30.5kV, 135V)
3. R. CRT DRIVE assembly	(10.5kV)
4. G. CRT DRIVE assembly	(10.5kV)
5. B. CRT DRIVE assembly	(10.5kV)
6. CRT assembly R	(30.5kV)
7. CRT assembly G	(30.5kV)
8. CRT assembly B	(30.5kV)
9. Focus variable resistor (VR1)	(10.5kV)
10. Deflection yokes (L1, L2 and L3)	(Approx. 1100V at peak)

X-ray protection

- Regarding the parts which are relative to radiation of X-rays (There is the danger to radiate X-ray from the individual CRT assembly R, G, B), there are notifications of caution in the individual schematic diagrams. Be sure to read them for safety's sake.
- The component parts for X-ray protection are as follows :When the current flows to the CRT assembly R, G, B, be sure to perform it with these parts being attached. Protection from the X-ray radiation is maintained in the state in which these parts have been installed to the CRT assembly R, G, B. Accordingly, never supply current only to the CRT assembly R, G, B.

  Moreover, the anode voltage of the CRT assembly R, G, B should always be kept not higher than the predetermined value (in the minimum brightness and picture state when non signal input is higher than 30.9kV). Be sure to drive the CRT assembly R, G, B by using a completely functional POWER SUPPLY assembly and V-AMP assembly which have been adjusted completely in the combined state. (When the voltage abnormally becomes high, the X-ray protection circuit will operate.)

1. CRT assembly R, G, B(Do not dismantle CRT assemblies under any circumstances).
2. Each Lens assemblies

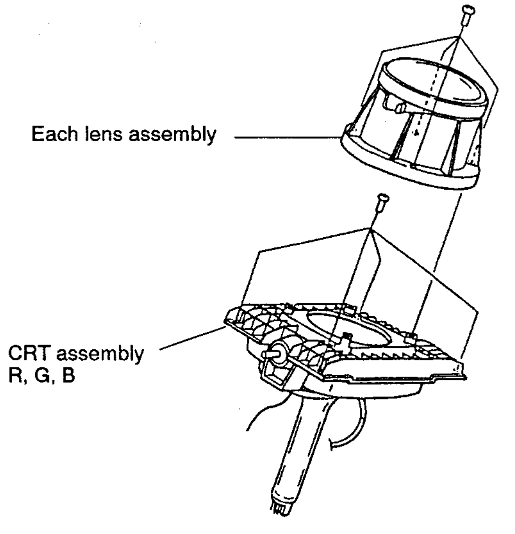


Fig. 3-2 Component parts for X-ray protection

4. HOW TO CLEAN

Note:
Cleaning liquid B4(GEM1004) for LD players is usable for projection TV display.

Jigs

Use the following for cleaning optical components such as lens, mirror and screen.

Name	Number
Cleaning cloth, MINIMAX	GED-009
Cleaning liquid, B4	GEM1004

Note: Wear gloves when holding optical components lest you should make fingerprints.

4.1 Method of Cleaning Lenses and Mirrors

1. Remove dust with an airbrush.
2. Apply some cleaning liquid to the cloth and wipe the dirt off with the cloth.
3. If the component is not so dirty, moisten it with breath and wipe it with the cloth.

Note: Wipe it softly lest you should scratch the lens.

4.2 Screen Cleaning

1. Apply the cleaning liquid to the above cloth or similar soft cloth and wipe the dirt off with the cloth.
2. Apply de-electrifier to the rear-surface or fresnellens side of the screen, or dust will stick on it.

Note:
(1) Apply no alcoholic liquid such as thinner and benzine to the front surface lest the black printing on the rear surface should come off.
(2) Use Ascetete-cloth tape, GYH1001, for sticking Fresnel lens and lenticular sheet together.

5. EXPLODED VIEWS, PACKING AND PARTS LIST

NOTES:

- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *Parts marked by ☆ are important parts which relate to X-rays radiation.*
  If any of these parts need to be replaced, always replace with specified parts.

PARTS LIST

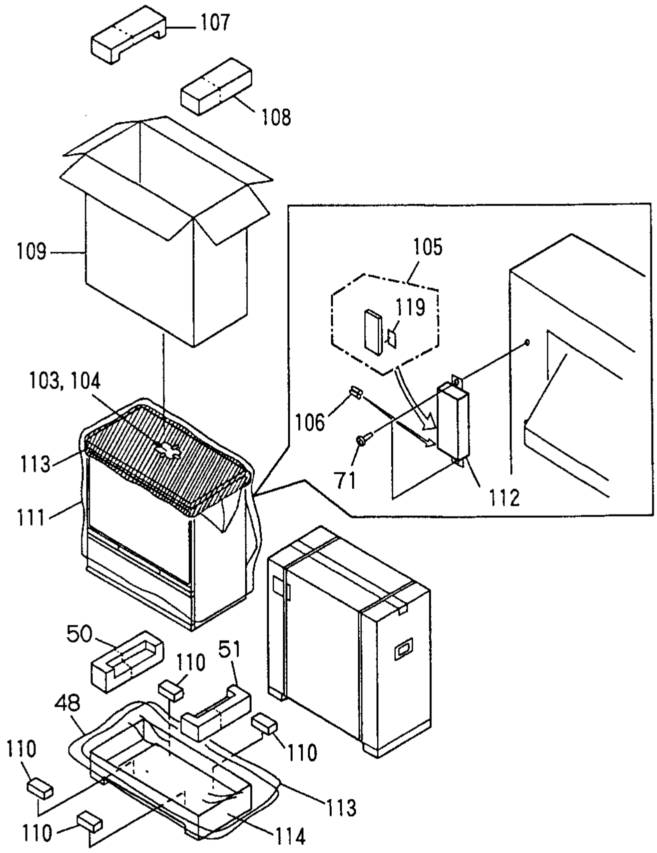
Mark	No.	Description	Part No.
	1	AUDIO SELECTOR ASSEMBLY	AWZ4185
	2	P IN P SELECTOR ASSEMBLY	AWZ4188
	3	REC MUTE ASSEMBLY	AWZ4470
	4	AV I/O-P IN P-Y/C SEP ASSEMBLY	AWZ4240
	5	TUNER-VIDEO ASSEMBLY	AWV1355
☆	6	POWER SUPPLY ASSEMBLY	AWV1360
	7	CONVERGENCE ASSEMBLY	AWZ5058
	8	R. CRT DRIVE ASSEMBLY	AWZ4179
	9	G. CRT DRIVE ASSEMBLY	AWZ4180
	10	B. CRT DRIVE ASSEMBLY	AWZ4181
	11	W FRONT CONTROL ASSEMBLY	AWZ5063
	12	RECEIVER ASSEMBLY	AWZ5064
☆	13	V-AMP ASSEMBLY	AWZ5065
	14	MICROCOMPUTER ASSEMBLY	AWZ5066
	15	A CONNECTOR ASSEMBLY	AWZ5067
	16	B CONNECTOR ASSEMBLY	AWZ5068
	17	CLOSED-CAPTION ASSEMBLY	AWZ5069
	18	DOOR (SD-P5071-K)	AAN1380
	18	DOOR (SD-P4571-K)	AAN1379
⚠	19	FUSE (4A/125V, FU106)	AEK1018
	20	CONTROL PANEL	AMB1793
	21	CASTER	AMR2547
⚠	22	FUSE (6.3A/125V, FU103)	AEK-309
⚠	23	FUSE (6.3A/125V, FU105)	AEK-309
	24	SPECIAL SCREW	ABA1126
NSP	25	CHASSIS L	ANA1166
NSP	26	LEAD CLAMPER	AEP-329
⚠	27	FOCUS VR (VR1)	ACX1082
⚠	28	DEFLECTION YOKE (L1-L3)	ATL1086
	29	CONE SPEAKER	APV1023
⚠	30	AC POWER CORD	ADG1058
NSP	31	CHASSIS R	ANA1165
NSP	32	CRT STAND (50) (SD-P5071-K)	ANA1169
NSP	32	CRT STAND (45) (SD-P4571-K)	ANA1171
NSP	33	CRT STAND HOLDER L	ANA1173
NSP	34	CRT STAND HOLDER R	ANA1174
NSP	35	REAR PANEL	ANC1876
NSP	36	CONVERGENCE STAY	AND1035
NSP	37	MIRROR HOLDER ASSEMBLY	ANG1271
NSP	38	VR HOLDER	ANG1404
NSP	39	PCB STAND	ANG1640
NSP	40	PCB FRAME	ANG1641

Mark	No.	Description	Part No.
NSP	41	CORD PLATE	ANG1650
	42	UPPER METAL FRAME	ANG1829
NSP	43	UPPER CORNER STAY L	ANG1830
NSP	44	UPPER CORNER STAY R	ANG1831
NSP	45	UNDER CORNER STAY L	ANG1832
NSP	46	UNDER CORNER STAY R	ANG1833
NSP	47	SCREEN HOLDER V(50) (SD-P5071-K)	ANG1834
NSP	47	SCREEN HOLDER V (SD-P4571-K)	ANG1841
NSP	48	VINYL SHEET M	AHG1094
NSP	49	SCREEN HOLDER H (SD-P5071-K)	ANG1843
NSP	49	SCREEN HOLDER H (45) (SD-P4571-K)	ANG1844
	50	UNDER PAD L	AHA1637
	51	UNDER PAD R	AHA1638
	52	RIVET	AEC-441
NSP	53	RUBBER CUSHION	AEC1124
	54	RUBBER CUSHION	AEC1125
	55	SCREW	ABZ30P100FMC
NSP	56	CABINET WIRE HOLDER	AEC1263
	57	SCREEN CUSHION 50 (SD-P5071-K)	AEC1512
	57	SCREEN CUSHION 45 (SD-P4571-K)	AEC1513
NSP	58	CUSHION SHEET A	AEC1515
	59	CORD STOPPER	AEP-113
	60	BINDER	AEP-215
☆	61	LENS ASSEMBLY (R)	AMR2387
	62	MIRROR	AMR2425
☆	63	LENS ASSEMBLY (BB)	AMR2430
	64	FRESNEL LENS (50) (SD-P5071-K)	AMR2554
	64	FRESNEL LENS (45) (SD-P4571-K)	AMR2553
	65	LENTICULAR SHEET (50) (SD-P5071-K)	AMR2559
	65	LENTICULAR SHEET (45) (SD-P4571-K)	AMR2558
	66	TAPPING SCREW(STEEL)	ABA1069
	67	SCREW	ABA1099
	68	SPECIAL SCREW	ABA1121
	69	SCREW	ABA1149
	70	SCREW (STEEL)	ABA1168

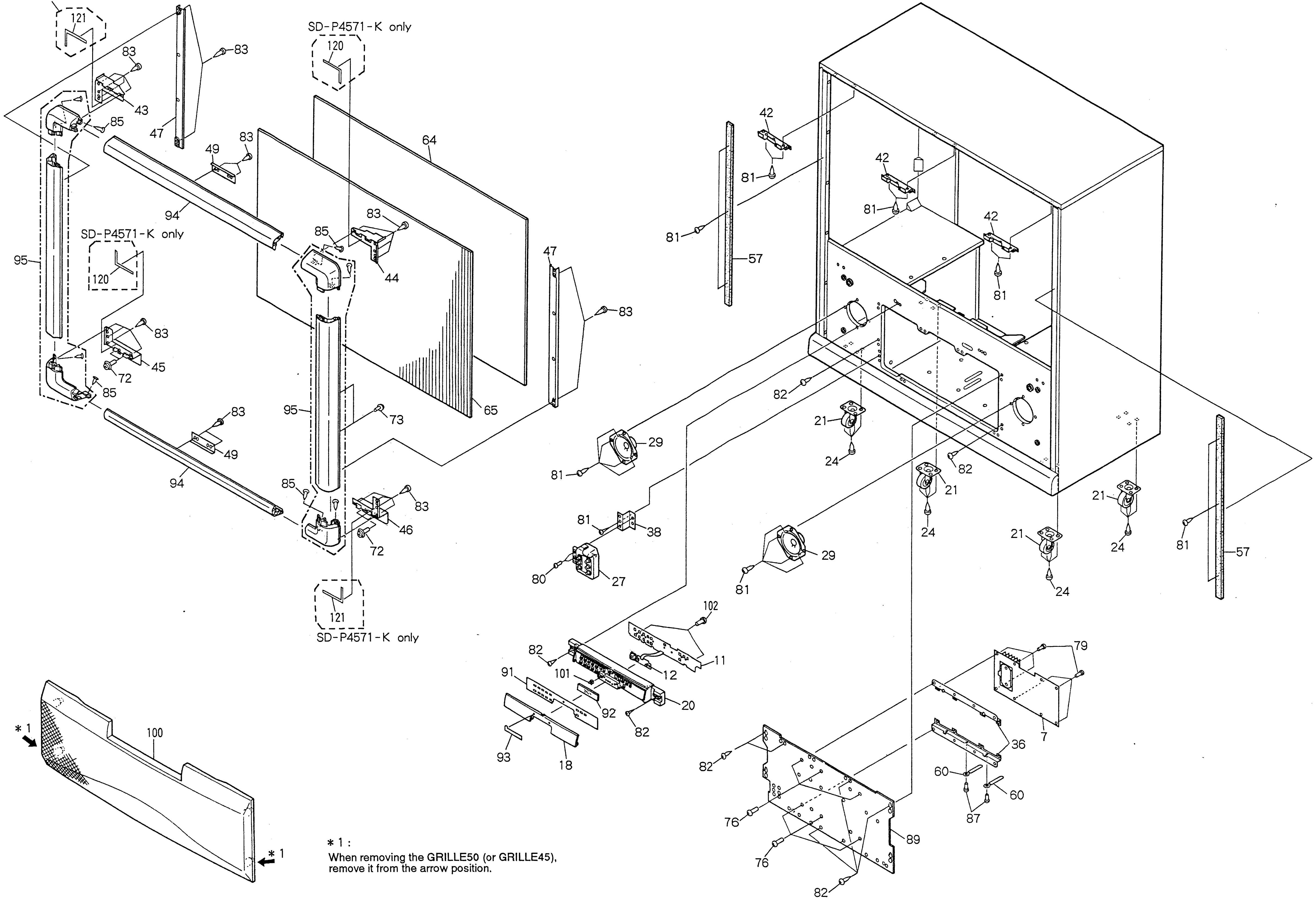
Mark	No.	Description	Part No.
	71	SCREW	ABA1188
	72	M5 SCREW	ABA1189
	73	SCREW (STEEL)	ABA1190
	74	HEXAGONAL DUCT NUT	ABN-087
	75	SCREW	ABZ30P080FZK
	76	SCREW	ABZ30P120FZK
	77	SCREW	ACZ40P080FMC
	78	SCREW	AMZ40P080FZK
	79	SCREW	BBZ30P080FZK
	80	SCREW	BBZ30P120FZK
	81	SCREW	BYC35P120FZB
	82	SCREW	BYC35P160FZK
	83	SCREW	BYC40P160FMC
	84	SCREW	FBT40P120FZK
	85	SCREW	OYC40P160FZK
	86	SCREW	VBT30P080FZK
	87	SCREW	VCZ30P060FMC
	88	WASHER	WAX0F160N100
NSP	89	BLIND PLATE	AMM2154
NSP	90	TRAY	AMR2563
	91	CONTROL SHEET	AAK2460
	92	INDICATOR PANEL	AAK2474
NSP	93	PIONEER BADGE	AAM1056
	94	SCREEN FRAME H (50B) (SD-P5071-K)	AAP1373
	94	SCREEN FRAME H (45B) (SD-P4571-K)	AAP1377
	95	SCREEN FRAME V ASSEMBLY (SD-P5071-K)	AAP1399
	95	SCREEN FRAME V ASSEMBLY(45) (SD-P4571-K)	AAP1400
NSP	96	MIRROR CASE (50)	AME1019
NSP	97	BACK COVER PANEL (SD-P5071-K)	AMM2076
NSP	97	BACK COVER PANEL (SD-P4571-K)	AMM2113
NSP	98	FRONT COVER PANEL	AMM2115
	99	BACK PANEL	AMM2157
	100	GRILLE 50 (SD-P5071-K)	AMR2539
	100	GRILLE 45 (SD-P4571-K)	AMR2540
	101	CATCHER	AEC1012
	102	SCREW	BPZ30P120FZK
	103	OPERATING INSTRUCTIONS (ENGLISH)	ARB1436
	104	ATTENTION CARD	ARM1054
	105	SR REMOTE CONTROL ASSEMBLY (CU-SD077)	AXD1357
NSP	106	ALKALINE(LR6, AA)	AEX1018
	107	UPPER PAD L	AHA1592
	108	UPPER PAD R	AHA1593
	109	UPPER CARTON (50) (SD-P5071-K)	AHD2540
	109	UPPER CARTON (45) (SD-P4571-K)	AHD2538

Mark	No.	Description	Part No.
	110	CUSHION(FOR UNDER CARTON)	AHA1649
NSP	111	VINYL SHEET XL	AHG1095
NSP	112	REMOTE CONTROL PACKING CASE	AHC1018
NSP	113	PACKING SHEET	AHG1156
	114	UNDER CARTON (50) (SD-P5071-K)	AHD2541
	114	UNDER CARTON (45) (SD-P4571-K)	AHD2539
	115	SCREW	VBZ30P200FMC
☆⚠	116	CRT ASSEMBLY R(SD-P5071-K)	AWY1225
☆⚠	116	CRT ASSEMBLY R(SD-P4571-K)	AWY1228
☆⚠	117	CRT ASSEMBLY G(SD-P5071-K)	AWY1226
☆⚠	117	CRT ASSEMBLY G(SD-P4571-K)	AWY1229
☆⚠	118	CRT ASSEMBLY B(SD-P5071-K)	AWY1227
☆⚠	118	CRT ASSEMBLY B(SD-P4571-K)	AWY1230
	119	BATTERY COVER	AZN2187
NSP	120	SCREEN SPACER L (SD-P4571-K)	AEC1516
NSP	121	SCREEN SPACER R (SD-P4571-K)	AEC1517

(1) PACKING



(2) FRONT VIEW


SD-P4571-K only
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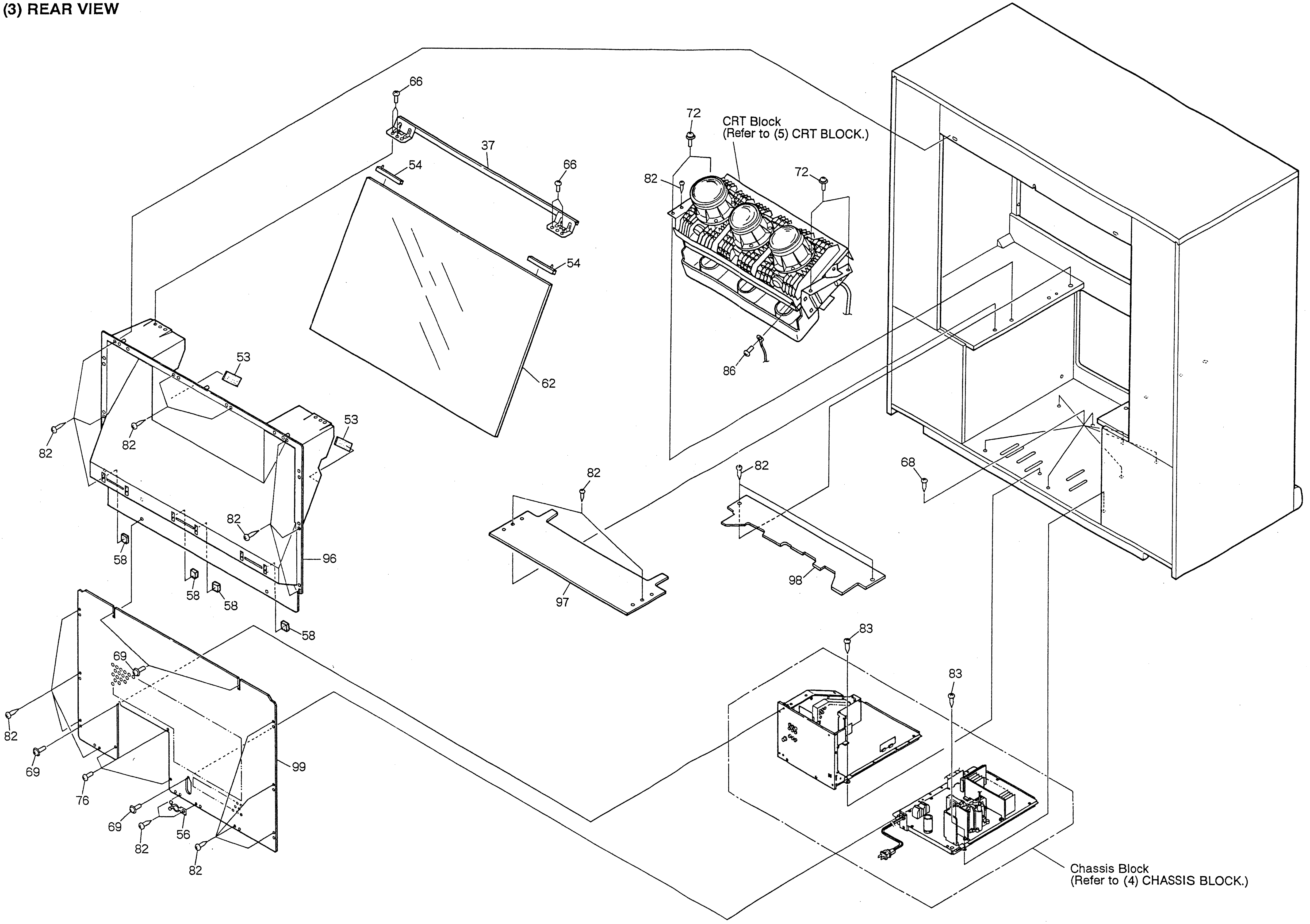
*1 :
When removing the GRILLE50 (or GRILLE45), remove it from the arrow position.

(3) REAR VIEW



CRT Block
(Refer to (5) CRT BLOCK.)

Chassis Block
(Refer to (4) CHASSIS BLOCK.)

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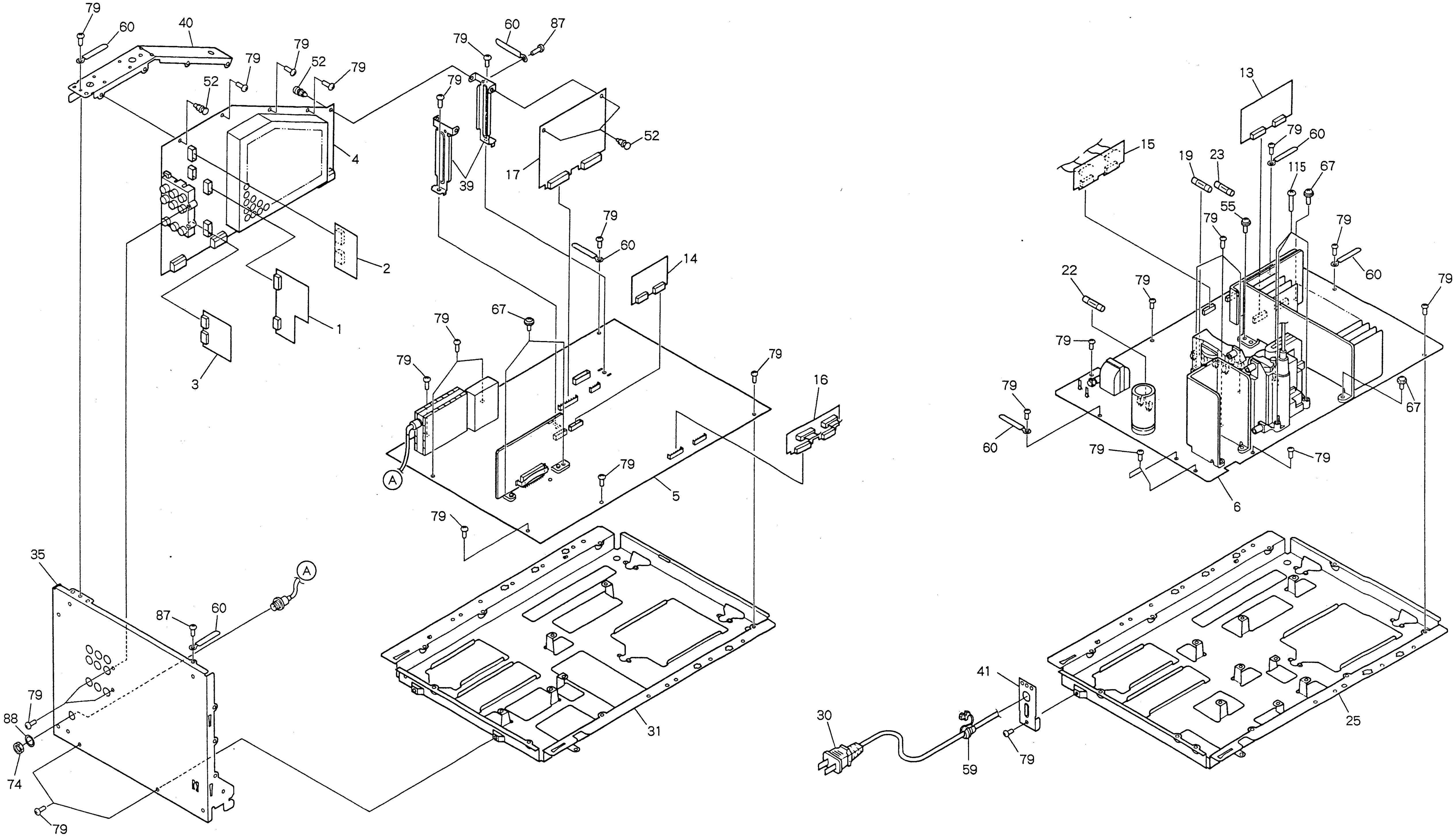
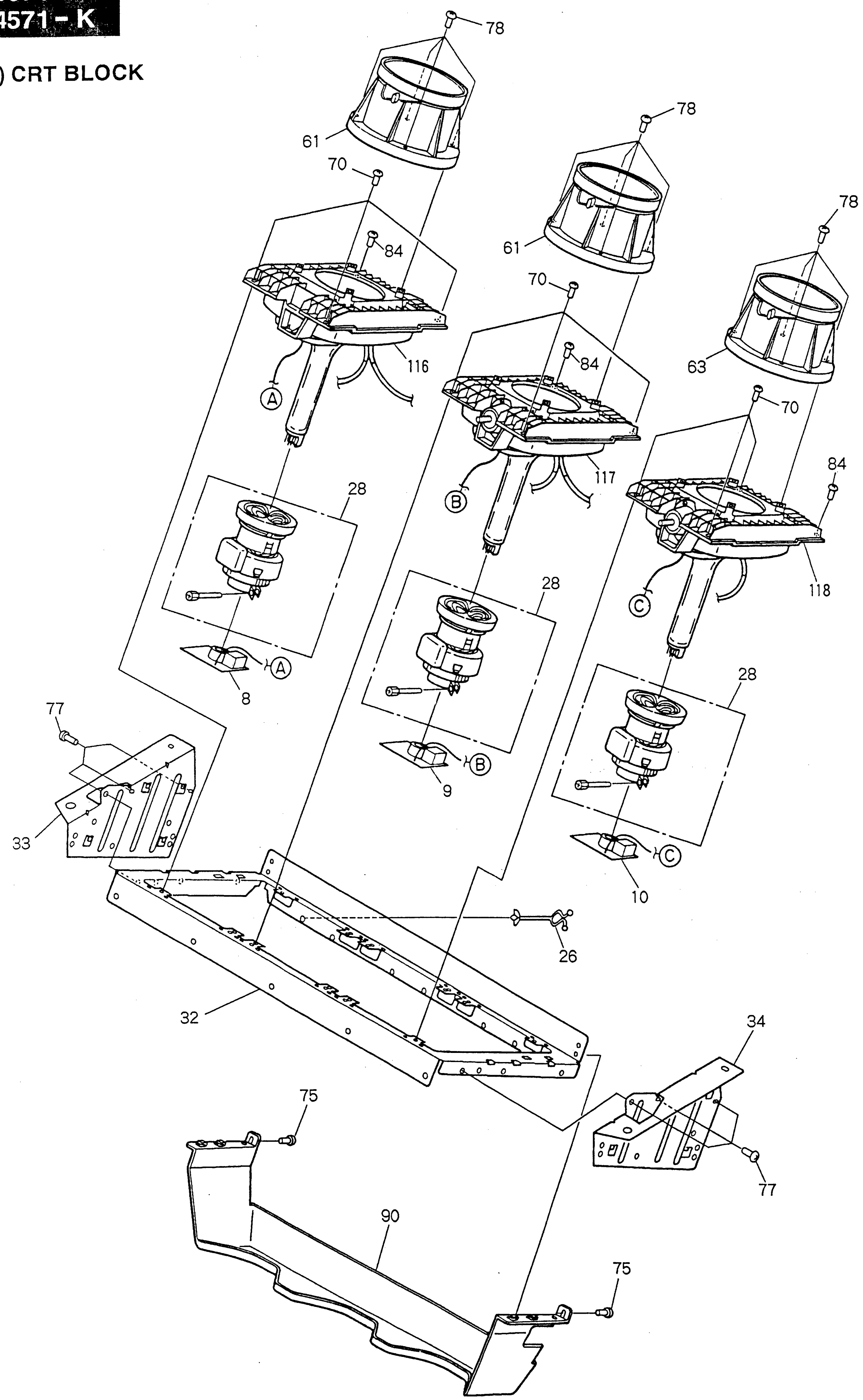
82

(4) CHASSIS BLOCK


79
60
40
79
79
52
52
79
4
60
87
79
79
39
17
52
2
1
3
13
15
19
23
79
60
115
67
55
79
79
14
60
22
79
60
79
79
67
79
79
16
79
A
5
79
60
79
79
67
79
6
35
A
87
60
31
41
30
25
79
88
74
79
59
79

(5) CRT BLOCK



6. SCHEMATIC AND PCB CONNECTION DIAGRAMS

(For SCHEMATIC DIAGRAMS)

Note: (Type 5)

1. When ordering service parts, be sure to refer to "PARTS LIST of EXPLODED VIEWS" or "PCB PARTS LIST".

2. Since these are basic circuits, some parts of them or the values of some components may be changed for improvement.

3. RESISTORS:
Unit: k:kΩ, M:MΩ, or Ω unless otherwise noted.
Rated power: 1/4W, 1/6W, 1/8W, 1/10W unless otherwise noted.
Tolerance:(F): ±1%, (G): ±2%, (K): ±10%, (M): ±20% or ±5% unless otherwise noted.

4. CAPACITORS:
Unit : p:pF or μF unless otherwise noted.
Ratings : capacitor (μF) /voltage (V) unless otherwise noted.
Rated voltage : 50V except for electrolytic capacitors.

5. COILS:
Unit : m:mH or μH unless otherwise noted.

6. VOLTAGE AND CURRENT:
▭ : DC voltage (V) at no input signal unless otherwise noted.
Value in (   ) is DC voltage at color bar signal input state.
⇦ mA or ← mA: DC current at no input siganl unless otherwise noted.

7. OTHERS:
- ➡ : Signal route.
- ⊘ : Adjusting point.
- ▼(Red) : Measurement point.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the parts. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by ☆ are important parts which relate to X-rays radiation. If any of these parts needs to be replaced, always replace with specified parts.
- Parts marked by × are important parts which relate to X-rays radiation. If a failure occurs in any of these parts, replace the printed circuit board assembly where the relevant part has already been adjusted as a working component. Do not replace the actual part itself. If any part marked by × is replaced, there is danger of being exposed to X-rays.

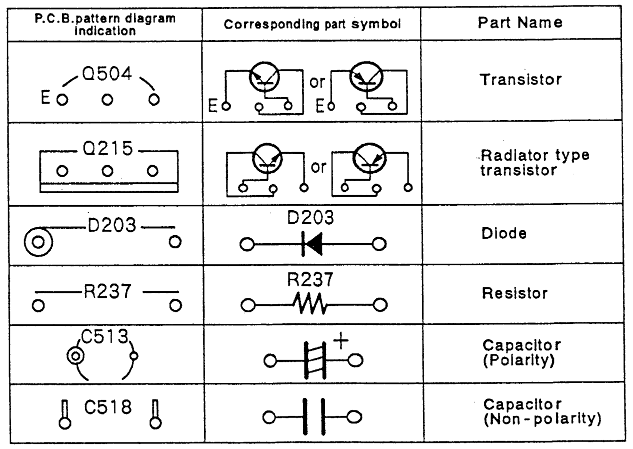
8. SWITCHES (Underline indicates switch position):
W FRONT CONTROL ASSEMBLY
S551 : POWER
S552 : PRESET MENU ON/OFF
S553 : DIGITAL PINP INPUT
S554 : DIGITAL PINP ON/OFF
S555 : SET ⎤
S556 : SELECT / ADJ + ⎥ PRESET MENU
S557 : SELECT / ADJ − ⎦
S558 : FACTORY ADJ
S559 : RETURN
S560 : STD / AV MEM
S561 : VOLUME +
S562 : VOLUME −
S563 : CHANNEL +
S564 : CHANNEL −
S565 : INPUT SELECTOR

9. For SCH-□ on the schematic diagram
•SCH-□ indicates the drawing number of the schematic diagram.
(SCH stands for schematic diagram.)

(For PCB CONNECTION DIAGRAMS)

NOTE

1. This P.C.B connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the following Table.



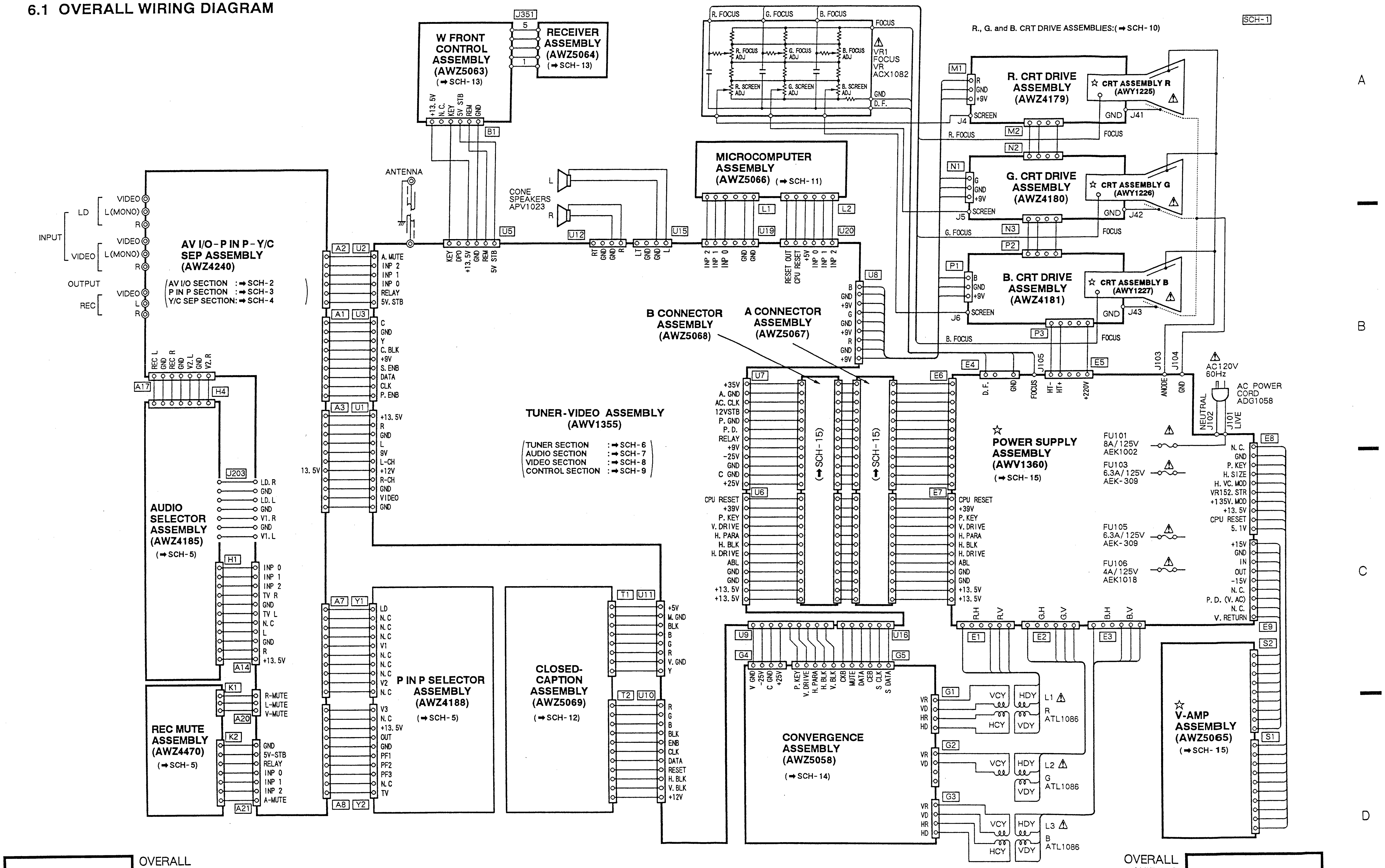
P.C.B.pattern diagram indication	Corresponding part symbol	Part Name
Q504 E	E or E	Transistor
Q215	or	Radiator type transistor
D203	D203	Diode
R237	R237	Resistor
C513	+	Capacitor (Polarity)
C518		Capacitor (Non-polarity)

Others

P.C.B pattern diagram indication	Part Name
IC	IC
S	Switch
RY	Relay
L	Coil
F	Filter
VR	Variable resistor or Semi-fixed resistor

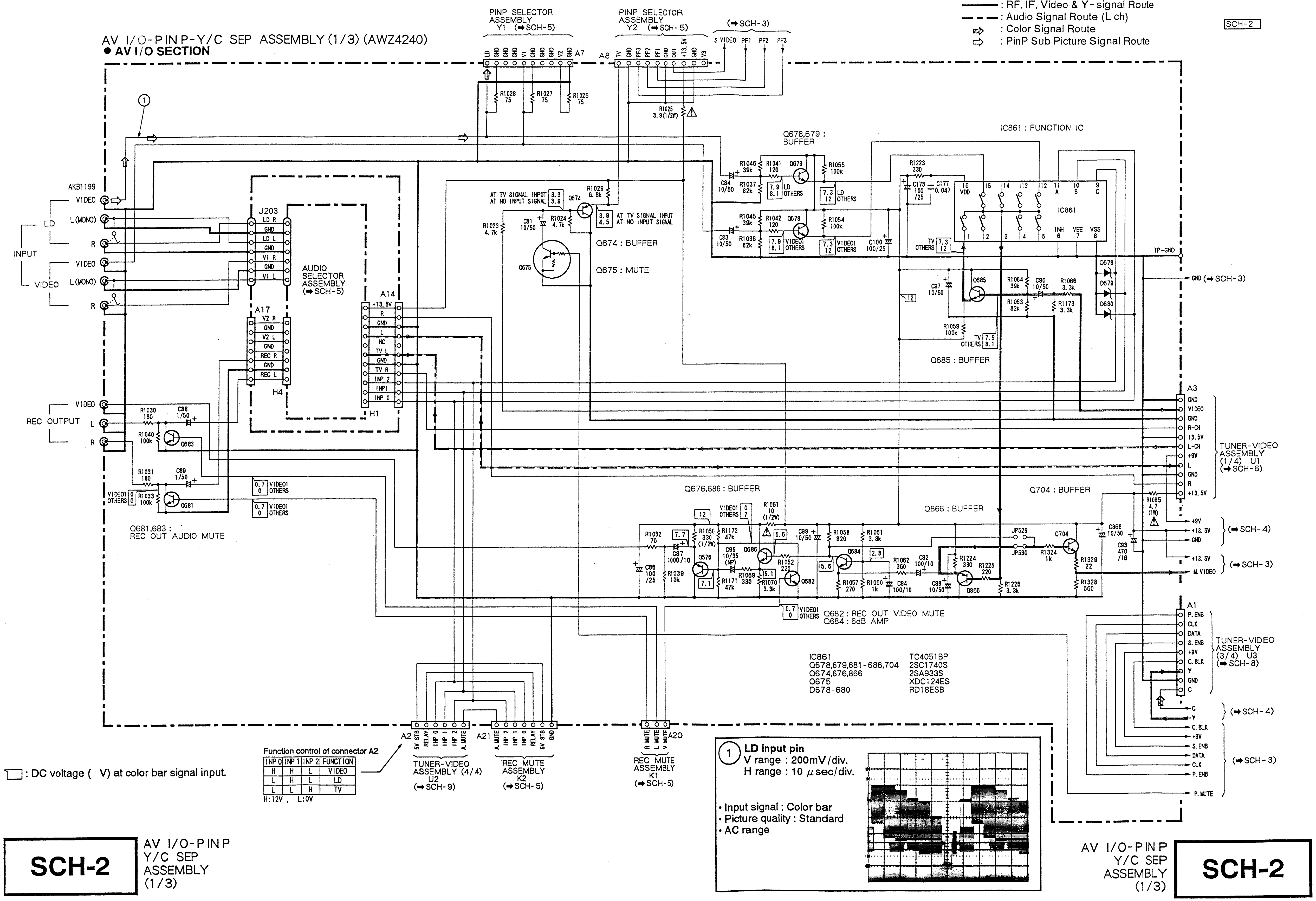
3. The capacitor terminal marked with ◎ (double circles) shows negative terminal.
4. The diode terminal marked with ◎ (double circles) shows cathode side.
5. The transistor terminal to which E is affixed shows the emitter.

6.1 OVERALL WIRING DIAGRAM


W FRONT CONTROL ASSEMBLY (AWZ5063) (➡SCH-13)
RECEIVER ASSEMBLY (AWZ5064) (➡SCH-13)
J351
B1
+13.5V
N.C.
KEY
5V STB
REM
GND
R. FOCUS
G. FOCUS
B. FOCUS
R. FOCUS ADJ
G. FOCUS ADJ
B. FOCUS ADJ
R. SCREEN ADJ
G. SCREEN ADJ
B. SCREEN ADJ
FOCUS
VR1 FOCUS VR ACX1082
GND
D.F.
R., G. and B. CRT DRIVE ASSEMBLIES:(➡SCH-10)
M1
R. CRT DRIVE ASSEMBLY (AWZ4179)
CRT ASSEMBLY R (AWY1225)
J4
J41
SCREEN
M2
R. FOCUS
N1
N2
G. CRT DRIVE ASSEMBLY (AWZ4180)
CRT ASSEMBLY G (AWY1226)
J5
J42
N3
G. FOCUS
P1
P2
B. CRT DRIVE ASSEMBLY (AWZ4181)
CRT ASSEMBLY B (AWY1227)
J6
J43
P3
B. FOCUS
MICROCOMPUTER ASSEMBLY (AWZ5066) (➡SCH-11)
L1
L2
U19
U20
ANTENNA
CONE SPEAKERS APV1023
L
R
U5
U12
U15
KEY
DPO
+13.5V
GND
REM
5V STB
RT
GND
GND
R
LT
GND
GND
L
INP 2
INP 1
INP 0
GND
GND
RESET OUT
CPU RESET
+5V
INP 0
INP 1
INP 2
INPUT
LD
VIDEO
L(MONO)
R
VIDEO
OUTPUT
REC
AV I/O-P IN P-Y/C SEP ASSEMBLY (AWZ4240)
AV I/O SECTION :➡SCH-2
P IN P SECTION :➡SCH-3
Y/C SEP SECTION:➡SCH-4
REC L
GND
REC R
GND
V2.L
GND
V2.R
A17
H4
A2
U2
A. MUTE
INP 2
INP 1
INP 0
RELAY
5V. STB
A1
U3
C
GND
Y
C. BLK
+9V
S. ENB
DATA
CLK
P. ENB
A3
U1
+13.5V
R
GND
L
9V
L-CH
+12V
R-CH
GND
VIDEO
GND
13.5V
J203
LD. R
GND
LD. L
GND
V1. R
GND
V1. L
AUDIO SELECTOR ASSEMBLY (AWZ4185) (➡SCH-5)
H1
INP 0
INP 1
INP 2
TV R
GND
TV L
N.C
L
GND
R
+13.5V
A14
K1
R-MUTE
L-MUTE
V-MUTE
A20
K2
GND
5V-STB
RELAY
INP 0
INP 1
INP 2
A-MUTE
A21
REC MUTE ASSEMBLY (AWZ4470) (➡SCH-5)
TUNER-VIDEO ASSEMBLY (AWV1355)
TUNER SECTION :➡SCH-6
AUDIO SECTION :➡SCH-7
VIDEO SECTION :➡SCH-8
CONTROL SECTION :➡SCH-9
A7
Y1
LD
N.C
N.C
N.C
V1
N.C
N.C
N.C
V2
N.C
V3
N.C
+13.5V
OUT
GND
PF1
PF2
PF3
N.C
TV
A8
Y2
P IN P SELECTOR ASSEMBLY (AWZ4188) (➡SCH-5)
CLOSED-CAPTION ASSEMBLY (AWZ5069) (➡SCH-12)
T1
U11
+5V
M. GND
BLK
B
G
R
V. GND
Y
T2
U10
R
G
B
BLK
ENB
CLK
DATA
RESET
H. BLK
V. BLK
+12V
B CONNECTOR ASSEMBLY (AWZ5068)
A CONNECTOR ASSEMBLY (AWZ5067)
U8
B
GND
+9V
G
GND
+9V
R
GND
+9V
U7
+35V
A. GND
AC. CLK
12VSTB
P. GND
P. D.
RELAY
+9V
-25V
GND
C GND
+25V
(SCH-15)
U6
CPU RESET
+39V
P. KEY
V. DRIVE
H. PARA
H. BLK
H. DRIVE
ABL
GND
GND
+13.5V
+13.5V
E4
E5
E6
E7
D.F.
GND
FOCUS
HT-
HT+
+220V
J105
J103
J104
ANODE
GND
AC120V 60Hz
AC POWER CORD ADG1058
NEUTRAL J102
J101 LIVE
POWER SUPPLY ASSEMBLY (AWV1360) (➡SCH-15)
FU101 8A/125V AEK1002
FU103 6.3A/125V AEK-309
FU105 6.3A/125V AEK-309
FU106 4A/125V AEK1018
E8
N.C.
GND
P. KEY
H. SIZE
H. VC. MOD
VR152. STR
+135V. MOD
+13.5V
CPU RESET
5.1V
+15V
GND
IN
OUT
-15V
N.C.
P.D. (V. AC)
N.C.
V. RETURN
E9
R.H
R.V
G.H
G.V
B.H
B.V
E1
E2
E3
U9
U16
G4
G5
V GND
-25V
C GND
+25V
P. KEY
V. DRIVE
H. PARA
H. BLK
V. BLK
CKB
MUTE
DATA
CEB
S CLK
S DATA
CONVERGENCE ASSEMBLY (AWZ5058) (➡SCH-14)
G1
G2
G3
VR
VD
HR
HD
VCY
HCY
HDY
VDY
L1 R ATL1086
L2 G ATL1086
L3 B ATL1086
S2
S1
V-AMP ASSEMBLY (AWZ5065) (➡SCH-15)

6.2 AV I/O-PINP-Y/C SEP ASSEMBLY (1/3)

——— : RF, IF, Video & Y-signal Route
– – – : Audio Signal Route (L ch)
⇨ : Color Signal Route
⇨ : PinP Sub Picture Signal Route


AV I/O-PINP-Y/C SEP ASSEMBLY (1/3) (AWZ4240)
● AV I/O SECTION
PINP SELECTOR ASSEMBLY Y1 (➡SCH-5)
PINP SELECTOR ASSEMBLY Y2 (➡SCH-5)
(➡SCH-3)
S VIDEO PF1 PF2 PF3
A7
A8
R1028 75
R1027 75
R1026 75
R1025 3.9(1/2W)
①
AKB1199
INPUT
LD
VIDEO
L(MONO)
R
REC OUTPUT
J203
A17
H4
H1
A14
AUDIO SELECTOR ASSEMBLY (➡SCH-5)
AT TV SIGNAL INPUT 3.3
AT NO INPUT SIGNAL 3.9
Q674 : BUFFER
Q675 : MUTE
Q678,679 : BUFFER
IC861 : FUNCTION IC
IC861
Q685 : BUFFER
Q676,686 : BUFFER
Q866 : BUFFER
Q704 : BUFFER
Q681,683 : REC OUT AUDIO MUTE
Q682 : REC OUT VIDEO MUTE
Q684 : 6dB AMP
TP-GND
GND (➡SCH-3)
A3
TUNER-VIDEO ASSEMBLY (1/4) U1 (➡SCH-6)
(➡SCH-4)
(➡SCH-3)
A1
TUNER-VIDEO ASSEMBLY (3/4) U3 (➡SCH-8)
(➡SCH-4)
(➡SCH-3)
A2
A21
A20
TUNER-VIDEO ASSEMBLY (4/4) U2 (➡SCH-9)
REC MUTE ASSEMBLY K2 (➡SCH-5)
REC MUTE ASSEMBLY K1 (➡SCH-5)

Function control of connector A2

INP 0	INP 1	INP 2	FUNCTION
H	H	L	VIDEO
L	H	L	LD
L	L	H	TV

H:12V, L:0V

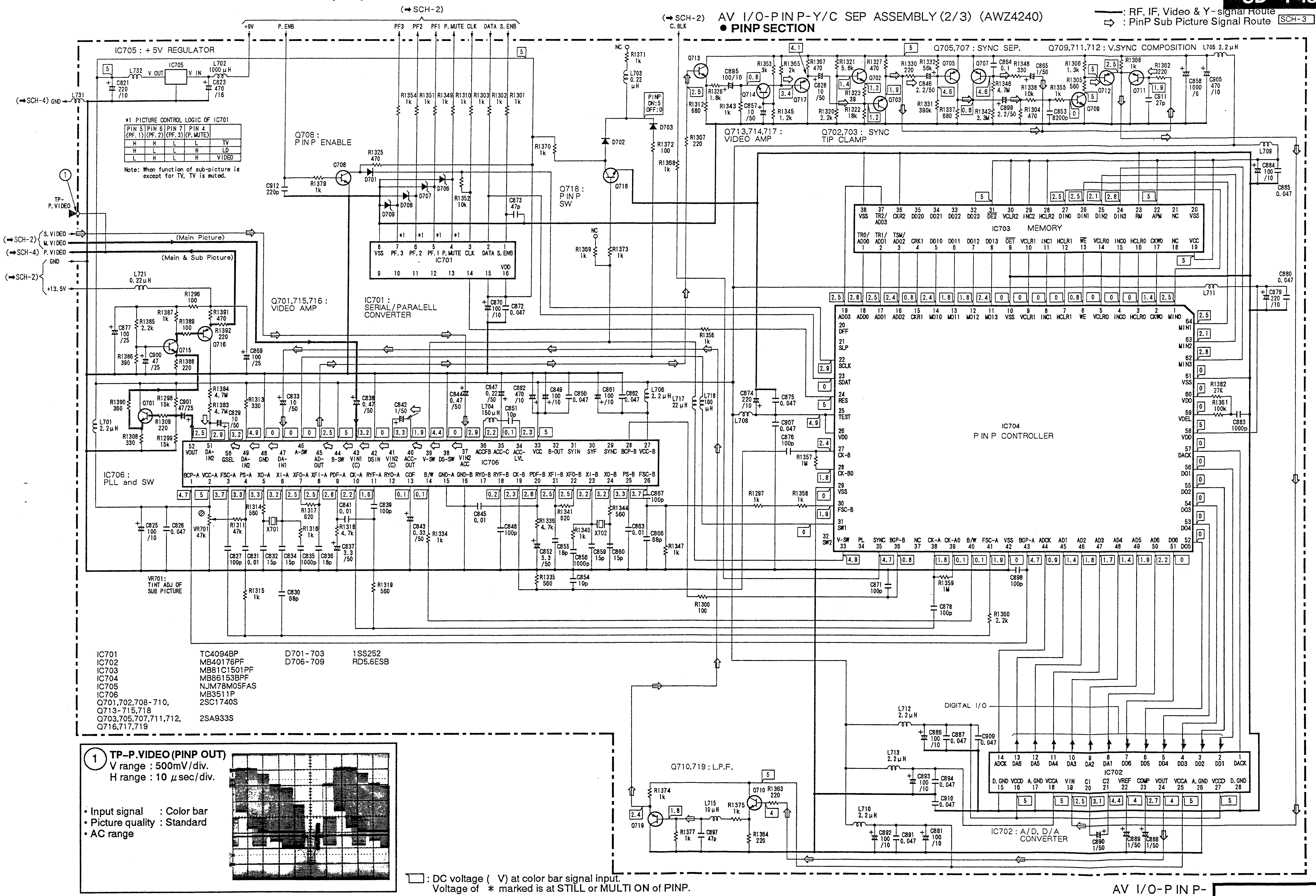
IC861	TC4051BP
Q678,679,681-686,704	2SC1740S
Q674,676,866	2SA933S
Q675	XDC124ES
D678-680	RD18ESB

① **LD input pin**
V range : 200mV/div.
H range : 10 μsec/div.

- Input signal : Color bar
- Picture quality : Standard
- AC range

▭ : DC voltage (V) at color bar signal input.

6.3 AV I/O-P IN P-Y/C SEP ASSEMBLY (2/3)


(→SCH-2) AV I/O-P IN P-Y/C SEP ASSEMBLY (2/3) (AWZ4240)
● PINP SECTION
(→SCH-2)
+9V
P.ENB
PF3 PF2 PF1 P.MUTE CLK DATA S.ENB
(→SCH-2) C.BLK
IC705 : +5V REGULATOR
Q708 : P IN P ENABLE
Q718 : P IN P SW
Q713,714,717 : VIDEO AMP
Q702,703 : SYNC TIP CLAMP
Q705,707 : SYNC SEP.
Q709,711,712 : V.SYNC COMPOSITION
Q701,715,716 : VIDEO AMP
IC701 : SERIAL/PARALELL CONVERTER
IC703 MEMORY
IC704 P IN P CONTROLLER
IC706 : PLL and SW
IC706
VR701 : TINT ADJ OF SUB PICTURE
DIGITAL I/O
IC702
IC702 : A/D, D/A CONVERTER
Q710,719 : L.P.F.
(→SCH-4) GND
TP-P.VIDEO
(→SCH-2) S.VIDEO
M.VIDEO
(→SCH-4) P.VIDEO
(→SCH-2) GND
+13.5V
(Main Picture)
(Main & Sub Picture)
PINP ON:5 OFF:0

*1 PICTURE CONTROL LOGIC OF IC701

PIN 5 (PF.1)	PIN 6 (PF.2)	PIN 7 (PF.3)	PIN 4 (P.MUTE)	
H	H	L	L	TV
H	L	L	H	LD
L	H	L	H	VIDEO

Note: When function of sub-picture is except for TV, TV is muted.

IC701	TC4094BP	D701-703	1SS252
IC702	MB40176PF	D706-709	RD5.6ESB
IC703	MB81C1501PF		
IC704	MB86153BPF		
IC705	NJM78M05FAS		
IC706	MB3511P		
Q701,702,708-710, Q713-715,718	2SC1740S		
Q703,705,707,711,712, Q716,717,719	2SA933S		

① **TP-P.VIDEO (PINP OUT)**
V range : 500mV/div.
H range : 10 μsec/div.

- Input signal : Color bar
- Picture quality : Standard
- AC range

—: RF, IF, Video & Y-signal Route
⇨ : PinP Sub Picture Signal Route SCH-3

▭ : DC voltage (V) at color bar signal input.
Voltage of * marked is at STILL or MULTI ON of PINP.

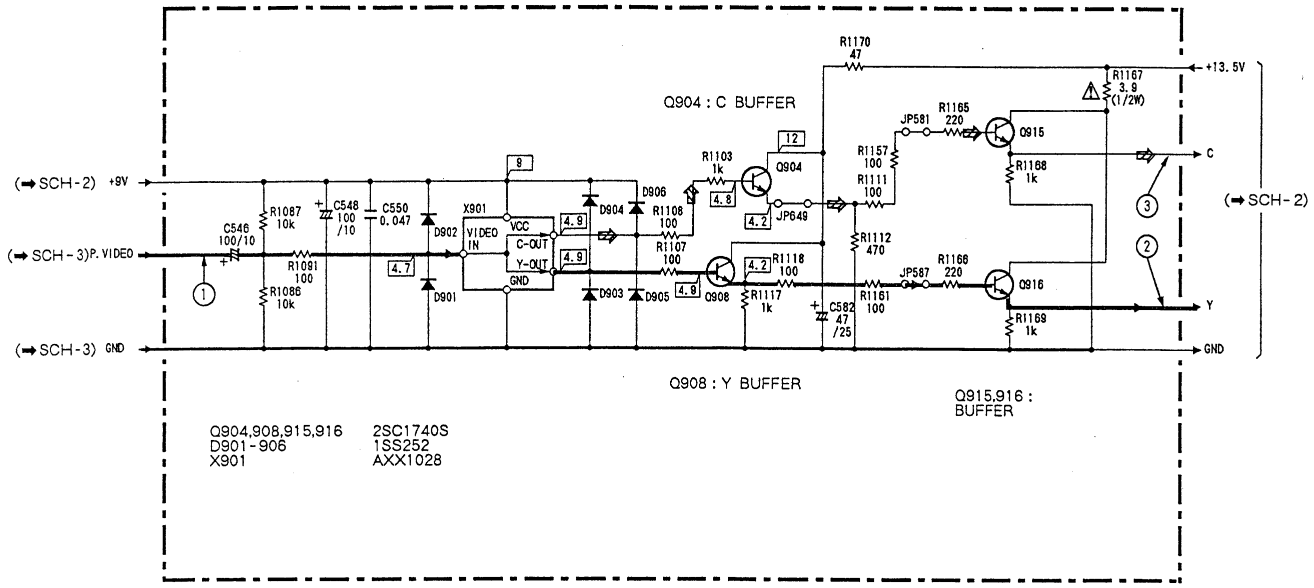
6.4 AV I/O-P IN P-Y/C SEP ASSEMBLY (3/3)

—— : RF, IF, Video & Y-signal Route
⇨ : Color Signal Route

SCH-4

AV I/O-P IN P-Y/C SEP ASSEMBLY (3/3) (AWZ4240)

● Y/C SEP SECTION

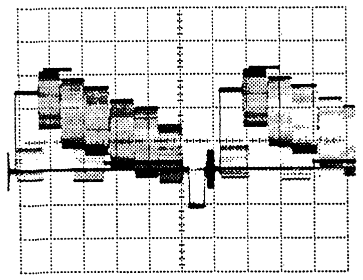

(➡SCH-2) +9V
(➡SCH-3) P. VIDEO
(➡SCH-3) GND
①
C546 100/10
R1087 10k
R1091 100
R1086 10k
C548 100 /10
C550 0.047
D902
D901
4.7
9
X901
VIDEO IN
VCC
C-OUT
Y-OUT
GND
4.9
4.9
D904
D906
D903
D905
R1108 100
R1107 100
4.9
Q904 : C BUFFER
R1103 1k
4.8
Q904
12
4.2
JP649
Q908
4.2
R1118 100
R1117 1k
C582 47 /25
R1170 47
R1157 100
R1111 100
R1112 470
R1161 100
JP581
R1165 220
Q915
R1167 3.9 (1/2W)
R1168 1k
JP587
R1166 220
Q916
R1169 1k
+13.5V
C
Y
GND
(➡SCH-2)
③
②
Q908 : Y BUFFER
Q915,916 : BUFFER
Q904,908,915,916 2SC1740S
D901-906 1SS252
X901 AXX1028

▭ : DC voltage (V) at color bar signal input.

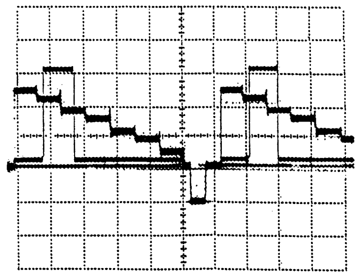
● Waveformes at Y/C SEP section

- Input signal : Color bar
- Picture quality : Standard
- AC range

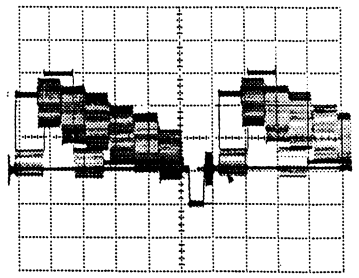
① **C546 lead wire of + side (PIP OUT)**
V range : 500mV/div.
H range : 10 μsec/div.



② **Q916 Emitter (Y OUTPUT)**
V range : 500mV/div.
H range : 10 μsec/div.



③ **Q915 Emitter (C OUTPUT)**
V range : 500mV/div.
H range : 10 μsec/div.

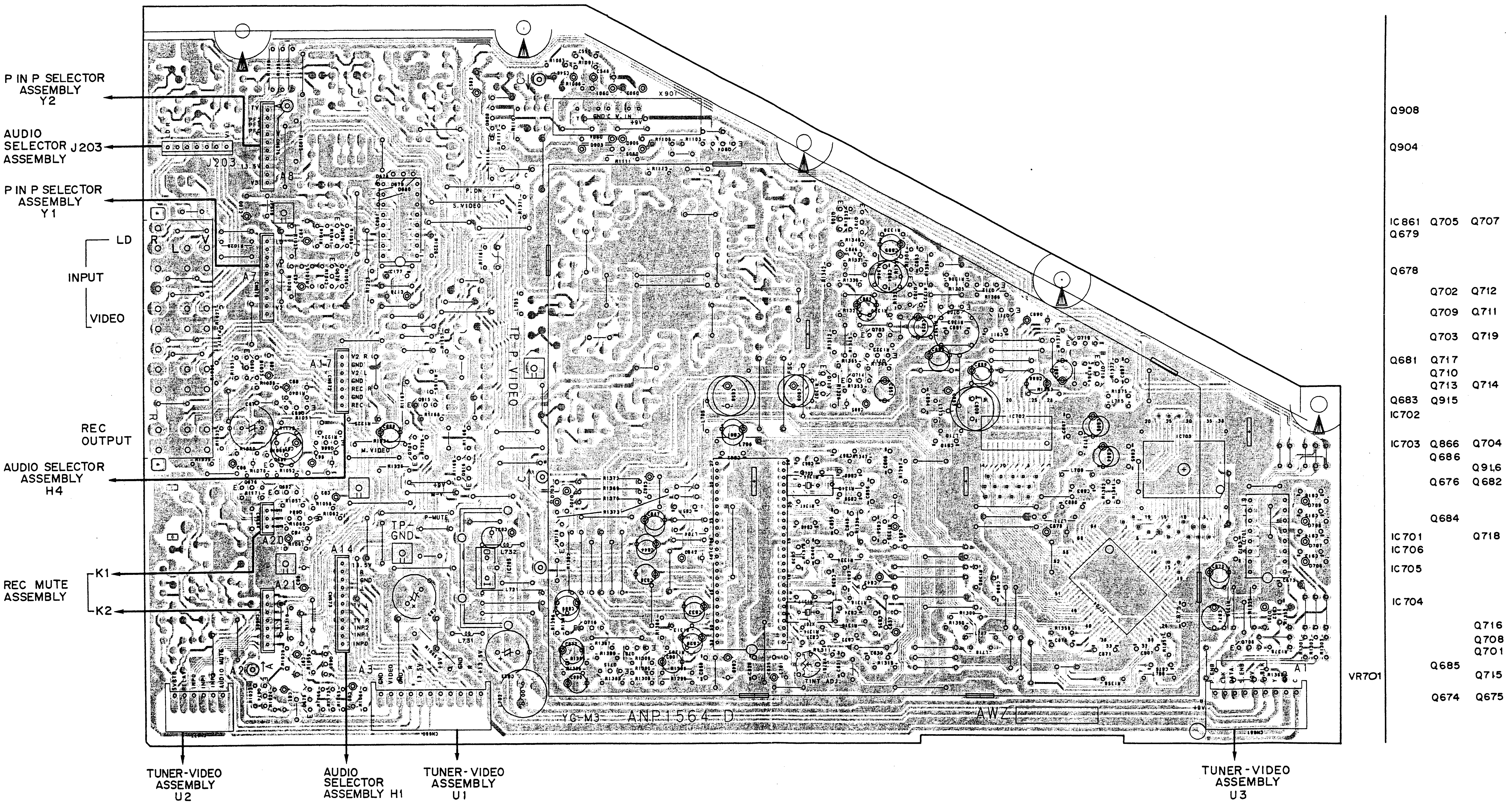


SCH-4

AV I/O-P IN P-
Y/C SEP
ASSEMBLY
(3/3)

AV I/O-PINP-Y/C SEP ASSEMBLY

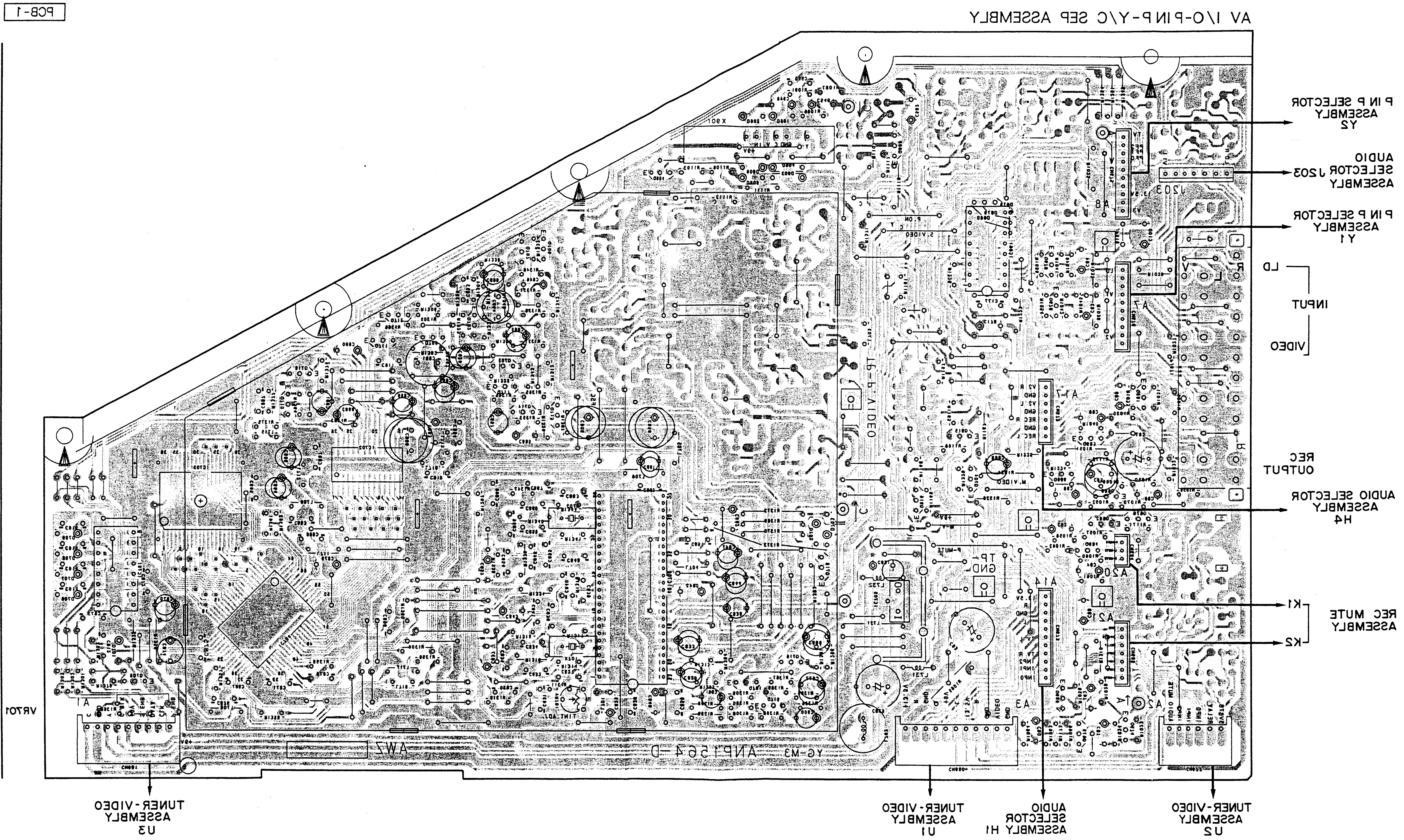
PCB-1


P IN P SELECTOR ASSEMBLY Y2
AUDIO SELECTOR ASSEMBLY J203
J203
P IN P SELECTOR ASSEMBLY Y1
LD
INPUT
VIDEO
REC OUTPUT
AUDIO SELECTOR ASSEMBLY H4
REC MUTE ASSEMBLY
K1
K2
A8
A7
AJ7
A20
A21
A14
A2
A3
A1
TP-P.VIDEO
TP-GND
P-MUTE
S.VIDEO
M.VIDEO
L732
L731
X901
IC702
IC703
TINT ADJ
YG-M3
ANP1564-D
AWZ
TUNER-VIDEO ASSEMBLY U2
AUDIO SELECTOR ASSEMBLY H1
TUNER-VIDEO ASSEMBLY U1
TUNER-VIDEO ASSEMBLY U3
Q908
Q904
IC861 Q705 Q707
Q679
Q678
Q702 Q712
Q709 Q711
Q703 Q719
Q681 Q717
Q710
Q713 Q714
Q683 Q915
IC702
IC703 Q866 Q704
Q686
Q916
Q676 Q682
Q684
IC701 Q718
IC706
IC705
IC704
Q716
Q708
Q701
Q685 Q715
VR701
Q674 Q675

This P. C. B. connection diagram is viewed from the parts mounted side.

PCB-1

AV I/O-PINP-Y/C SEP ASSEMBLY

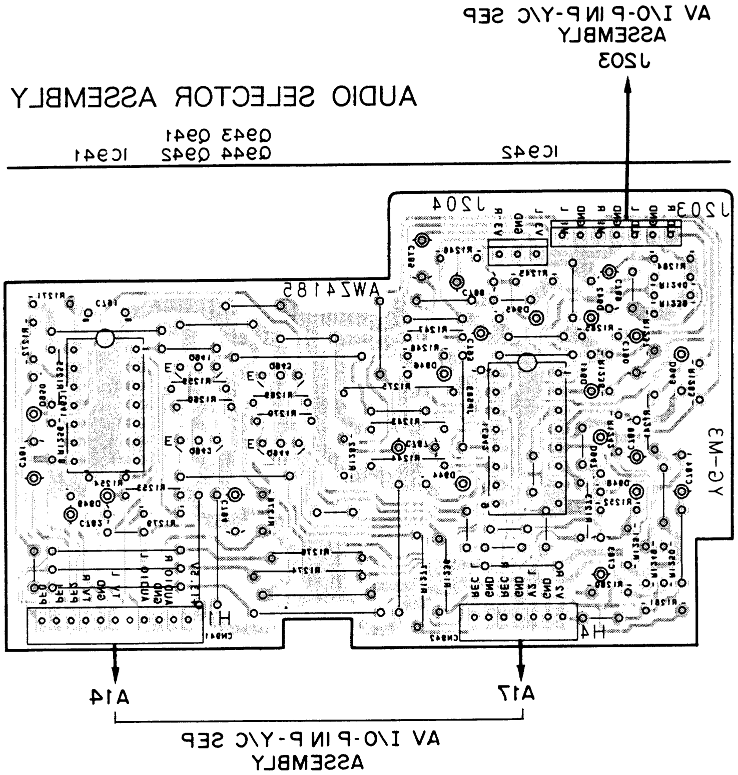

Q908
Q904
IC861 Q705 Q707
Q679
Q678
Q702 Q712
Q709 Q711
Q703 Q719
Q681 Q717
Q710
Q713 Q714
Q683 Q915
IC702
IC703 Q866 Q704
Q686
Q916
Q676 Q682
Q684
IC701 Q718
IC706
IC705
IC704
Q716
Q708
Q701
Q685
Q715
Q674 Q675
VR701
P IN P SELECTOR ASSEMBLY Y2
AUDIO SELECTOR J203 ASSEMBLY
J203
P IN P SELECTOR ASSEMBLY Y1
INPUT
LD
VIDEO
REC OUTPUT
AUDIO SELECTOR ASSEMBLY H4
REC MUTE ASSEMBLY
K1
K2
TUNER-VIDEO ASSEMBLY U3
TUNER-VIDEO ASSEMBLY U1
AUDIO SELECTOR ASSEMBLY H1
TUNER-VIDEO ASSEMBLY U2
ANP1564-D
AWZ
A1
A2
A3
A8
A14
A17
A20
A21
P-MUTE
TP-GND
+5V
+9V

This P. C. B. connection diagram is viewed from the foil side.

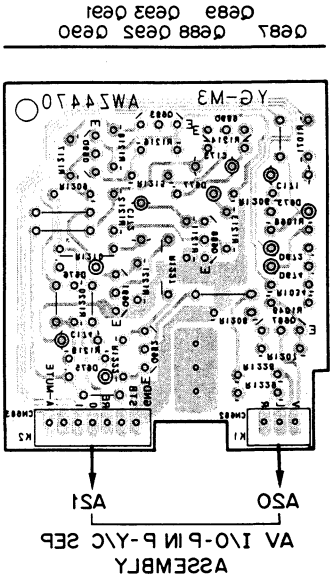
6.5 AUDIO SELECTOR, REC MUTE AND P IN P SELECTOR ASSEMBLIES

PCB-2

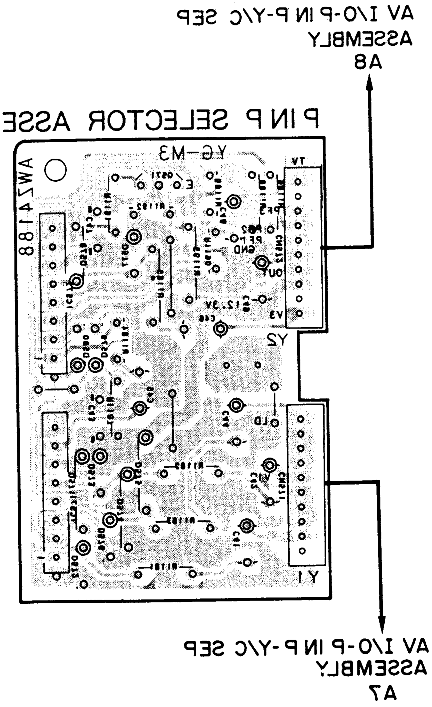
AUDIO SELECTOR ASSEMBLY


AV I/O-P IN P-Y/C SEP
ASSEMBLY
J203
Q943 Q941
Q944 Q942
IC941
IC942
J203
J204
AWZ4185
EM-GY
H1
H4
CN941
CN942
A14
A17
AV I/O-P IN P-Y/C SEP
ASSEMBLY

REC MUTE ASSEMBLY


Q689 Q693 Q691
Q687 Q688 Q692 Q690
AWZ4470
YG-M3
K2
K1
CN683
CN682
A21
A20
AV I/O-P IN P-Y/C SEP
ASSEMBLY

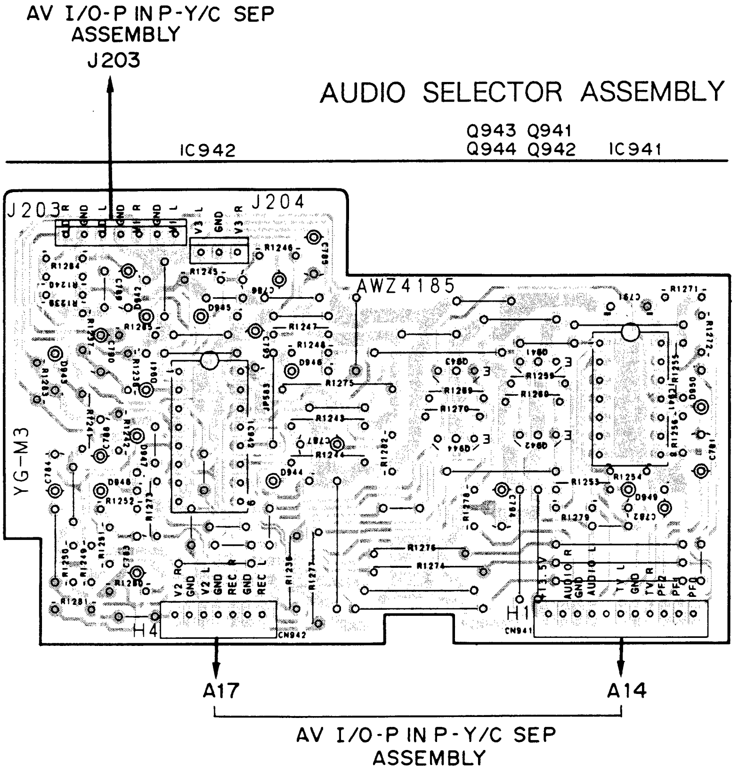
P IN P SELECTOR ASSEMBLY

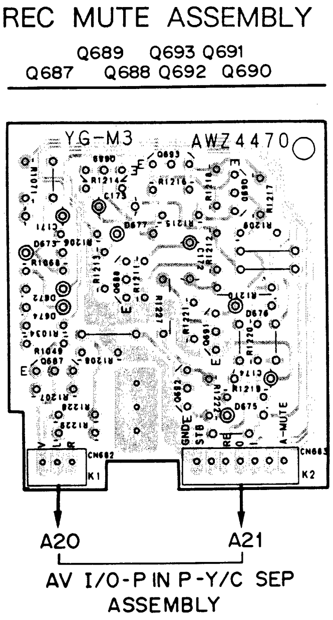

AV I/O-P IN P-Y/C SEP
ASSEMBLY
A8
AWZ4188
YG-M3
Y1
Y2
Y3
Y4
AV I/O-P IN P-Y/C SEP
ASSEMBLY
A7

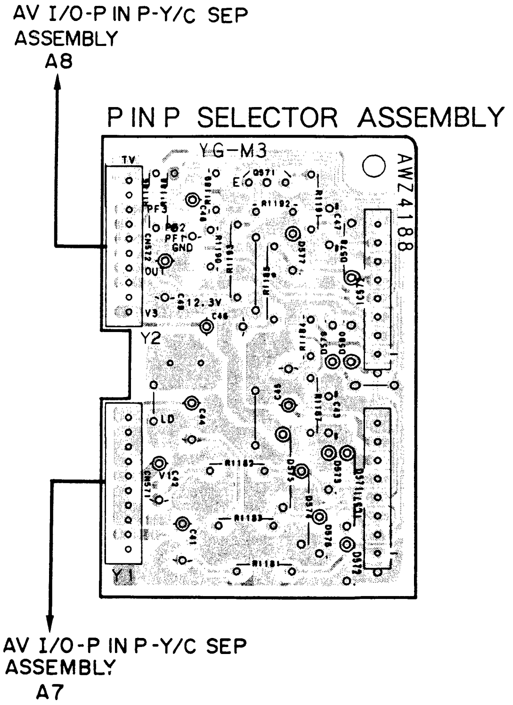
This P. C. B. connection diagram is viewed from the foil side.

6.5 AUDIO SELECTOR, REC MUTE AND P IN P SELECTOR ASSEMBLIES

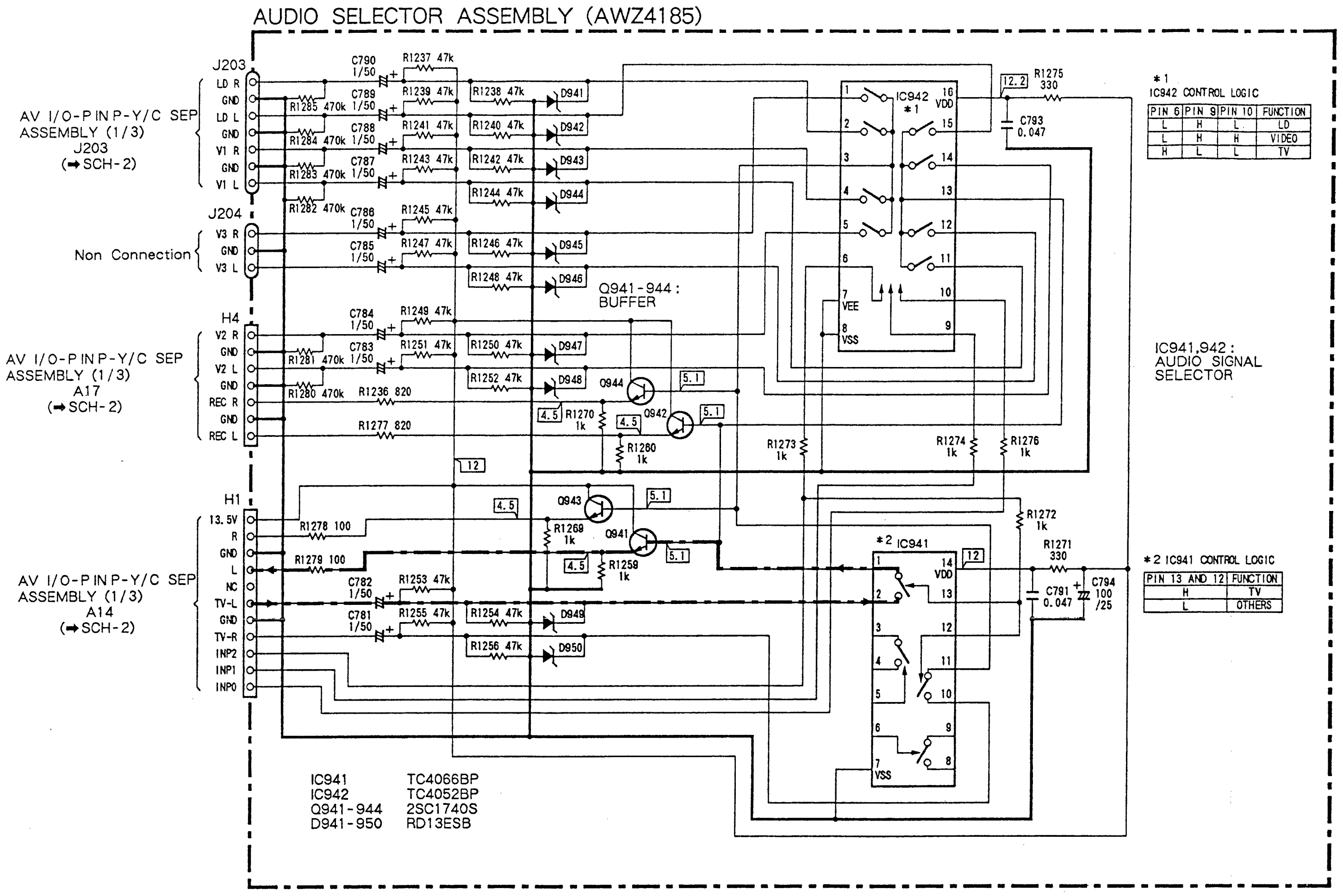
PCB-2


AV I/O-P IN P-Y/C SEP ASSEMBLY
J203
AUDIO SELECTOR ASSEMBLY
Q943 Q941
Q944 Q942
IC942
IC941
J203
J204
AWZ4185
YG-M3
H4
H1
CN942
CN941
A17
A14
AV I/O-P IN P-Y/C SEP ASSEMBLY


REC MUTE ASSEMBLY
Q689 Q693 Q691
Q687 Q688 Q692 Q690
YG-M3
AWZ4470
CN682
CN683
K1
K2
A20
A21
AV I/O-P IN P-Y/C SEP ASSEMBLY


AV I/O-P IN P-Y/C SEP ASSEMBLY
A8
P IN P SELECTOR ASSEMBLY
YG-M3
AWZ4188
TV
Y2
Y1
AV I/O-P IN P-Y/C SEP ASSEMBLY
A7

This P. C. B. connection diagram is viewed from the parts mounted side.

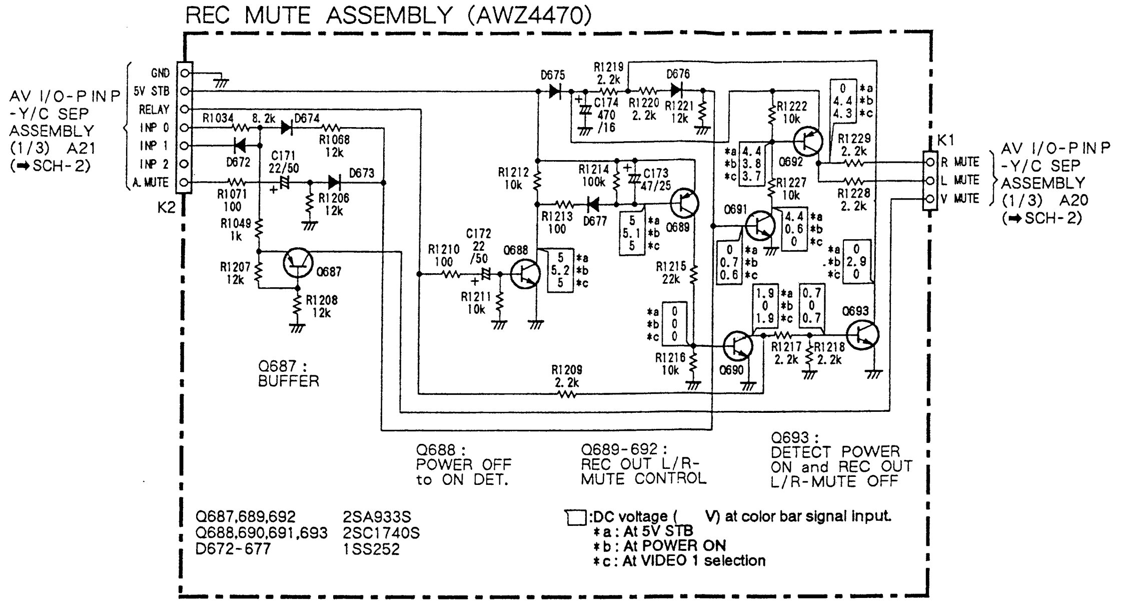

AUDIO SELECTOR ASSEMBLY (AWZ4185)
J203
LD R
GND
LD L
GND
V1 R
GND
V1 L
AV I/O-P IN P-Y/C SEP ASSEMBLY (1/3) J203 (➡SCH-2)
J204
V3 R
GND
V3 L
Non Connection
H4
V2 R
GND
V2 L
GND
REC R
GND
REC L
AV I/O-P IN P-Y/C SEP ASSEMBLY (1/3) A17 (➡SCH-2)
H1
13.5V
R
GND
L
NC
TV-L
GND
TV-R
INP2
INP1
INP0
AV I/O-P IN P-Y/C SEP ASSEMBLY (1/3) A14 (➡SCH-2)
IC942
*1
VDD
VEE
VSS
*2 IC941
VDD
VSS
Q941-944 : BUFFER
Q941
Q942
Q943
Q944
D941
D942
D943
D944
D945
D946
D947
D948
D949
D950
R1275 330
C793 0.047
R1271 330
R1272 1k
C791 0.047
C794 100/25
R1273 1k
R1274 1k
R1276 1k
R1277 820
R1236 820
R1278 100
R1279 100
R1280 1k
R1270 1k
R1268 1k
R1259 1k
12.2
12
5.1
4.5
IC941,942 : AUDIO SIGNAL SELECTOR
IC941 TC4066BP
IC942 TC4052BP
Q941-944 2SC1740S
D941-950 RD13ESB

*1
IC942 CONTROL LOGIC

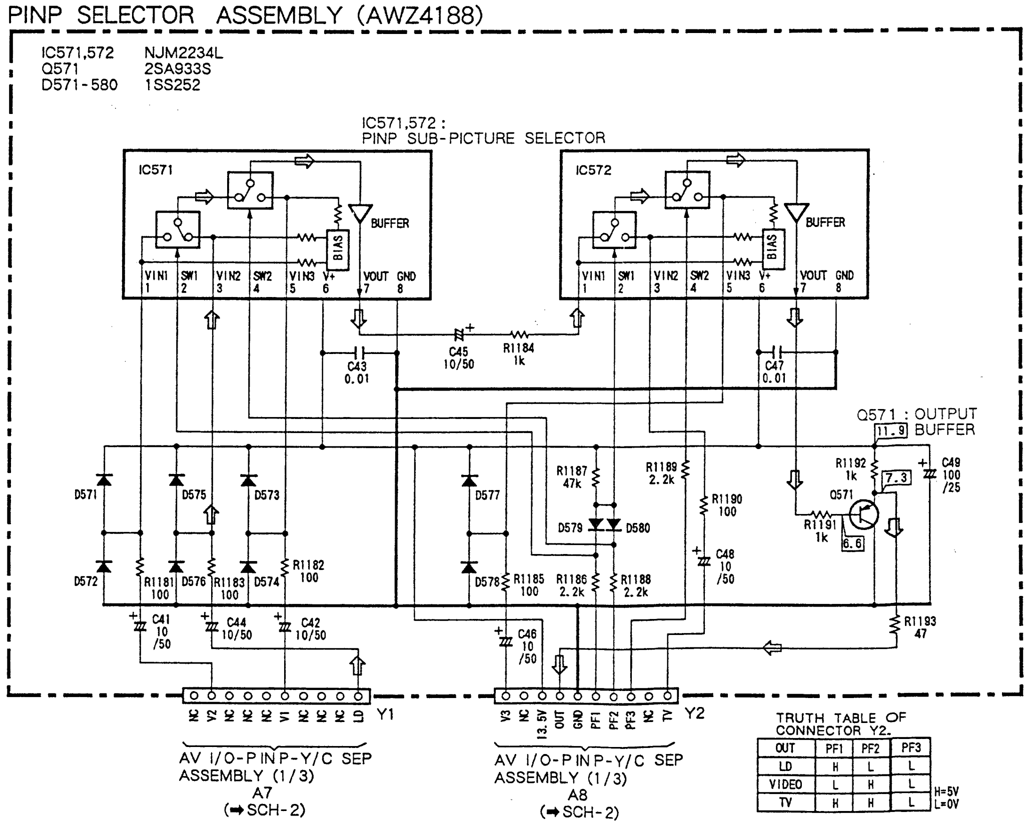
PIN 6	PIN 9	PIN 10	FUNCTION
L	H	L	LD
L	H	H	VIDEO
H	L	L	TV

*2 IC941 CONTROL LOGIC

PIN 13 AND 12	FUNCTION
H	TV
L	OTHERS


REC MUTE ASSEMBLY (AWZ4470)
GND
5V STB
RELAY
INP 0
INP 1
INP 2
A. MUTE
K2
AV I/O-P IN P -Y/C SEP ASSEMBLY (1/3) A21 (➡SCH-2)
K1
R MUTE
L MUTE
V MUTE
AV I/O-P IN P -Y/C SEP ASSEMBLY (1/3) A20 (➡SCH-2)
Q687 : BUFFER
Q688 : POWER OFF to ON DET.
Q689-692 : REC OUT L/R-MUTE CONTROL
Q693 : DETECT POWER ON and REC OUT L/R-MUTE OFF
Q687,689,692 2SA933S
Q688,690,691,693 2SC1740S
D672-677 1SS252

□:DC voltage (V) at color bar signal input.
*a : At 5V STB
*b : At POWER ON
*c : At VIDEO 1 selection


PINP SELECTOR ASSEMBLY (AWZ4188)
IC571,572 NJM2234L
Q571 2SA933S
D571-580 1SS252
IC571,572 : PINP SUB-PICTURE SELECTOR
IC571
IC572
BUFFER
BIAS
VIN1
SW1
VIN2
SW2
VIN3
V+
VOUT
GND
Q571 : OUTPUT BUFFER
11.9
7.3
6.6
C43 0.01
C45 10/50
R1184 1k
C47 0.01
C49 100/25
R1192 1k
R1191 1k
R1193 47
Y1
Y2
AV I/O-P IN P-Y/C SEP ASSEMBLY (1/3) A7 (➡SCH-2)
AV I/O-P IN P-Y/C SEP ASSEMBLY (1/3) A8 (➡SCH-2)

TRUTH TABLE OF CONNECTOR Y2.

OUT	PF1	PF2	PF3
LD	H	L	L
VIDEO	L	H	L
TV	H	H	L

H=5V
L=0V

AUDIO SELECTOR AND PINP SELECTOR ASSEMBLIES

□:DC voltage (V) at color bar signal input without notice.

—·— : Audio Signal Route (L ch)
⇨ : PinP Sub Picture Signal Route

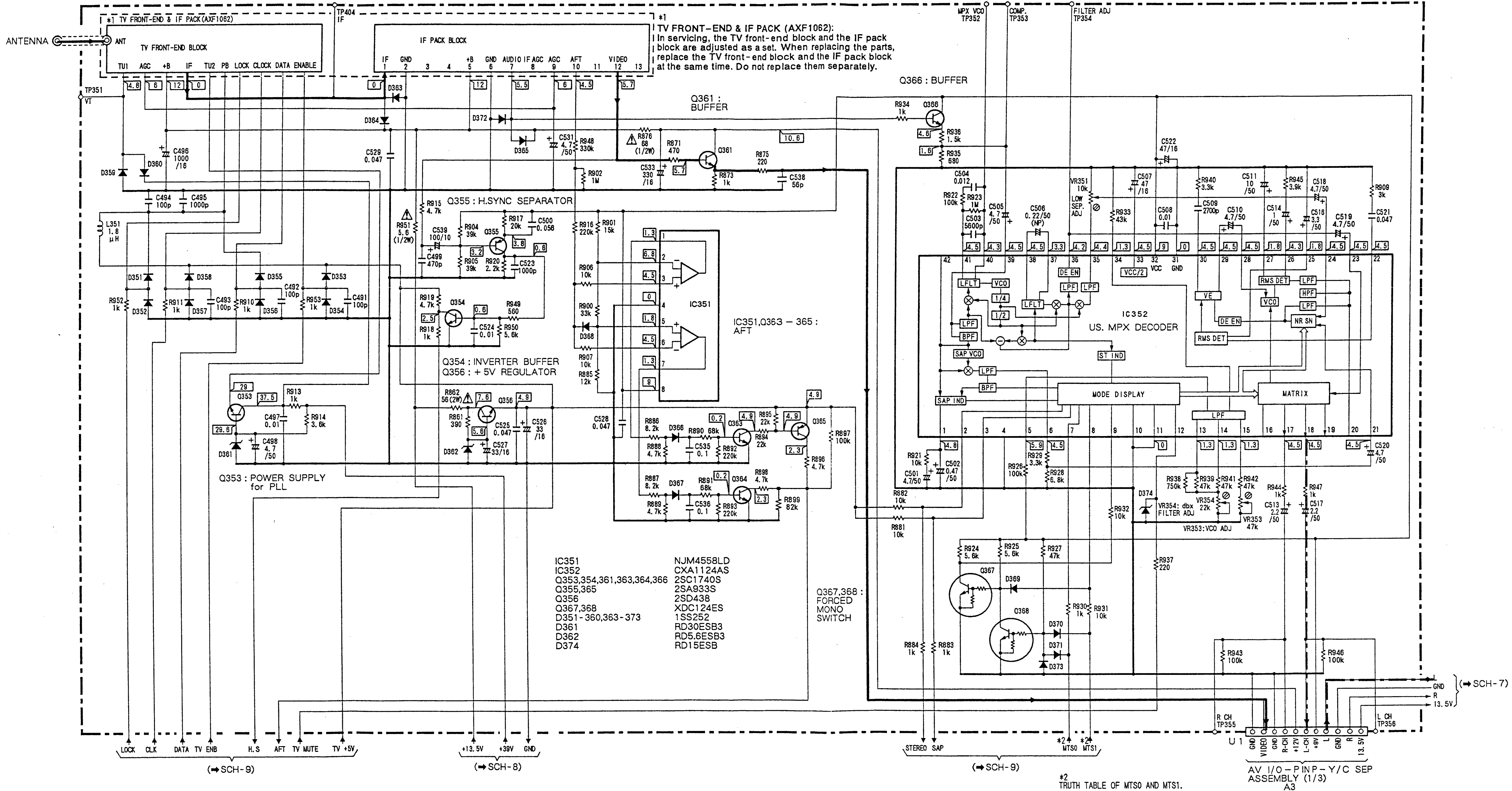
6.6 TUNER–VIDEO ASSEMBLY (1/4)

——— : RF, IF, Video & Y-signal Route
–·–·– : Audio Signal Route (L ch)

SCH-6

TUNER-VIDEO ASSEMBLY (1/4) (AWV1355)

● TUNER SECTION


ANTENNA
TV FRONT-END & IF PACK (AXF1062)
TV FRONT-END BLOCK
ANT
TU1 AGC +B IF TU2 PB LOCK CLOCK DATA ENABLE
IF PACK BLOCK
IF GND +B GND AUDIO IF AGC AGC AFT VIDEO
TP404 IF
TP351 VT
MPX VCO TP352
COMP. TP353
FILTER ADJ TP354
Q366 : BUFFER
Q361 : BUFFER
Q355 : H.SYNC SEPARATOR
Q354 : INVERTER BUFFER
Q356 : +5V REGULATOR
Q353 : POWER SUPPLY for PLL
IC351
IC351,Q363 – 365 : AFT
IC352 US. MPX DECODER
MODE DISPLAY
MATRIX
SAP IND
ST IND
DE EN
RMS DET
NR SN
LPF
HPF
BPF
VCO
LFLT
SAP VCO
VR351 10k LOW SEP. ADJ
VR354: dbx FILTER ADJ
VR353: VCO ADJ
Q367,368 : FORCED MONO SWITCH
LOCK CLK DATA TV ENB H.S AFT TV MUTE TV +5V
(→SCH-9)
+13.5V +39V GND
(→SCH-8)
STEREO SAP
(→SCH-9)
*2 MTS0 *2 MTS1
R CH TP355
L CH TP356
GND R 13.5V (→SCH-7)
U1 GND VIDEO GND R-CH +12V L-CH +9V L GND R 13.5V
AV I/O–PINP–Y/C SEP ASSEMBLY (1/3) A3 (→SCH-2)

*1
TV FRONT-END & IF PACK (AXF1062):
In servicing, the TV front-end block and the IF pack block are adjusted as a set. When replacing the parts, replace the TV front-end block and the IF pack block at the same time. Do not replace them separately.

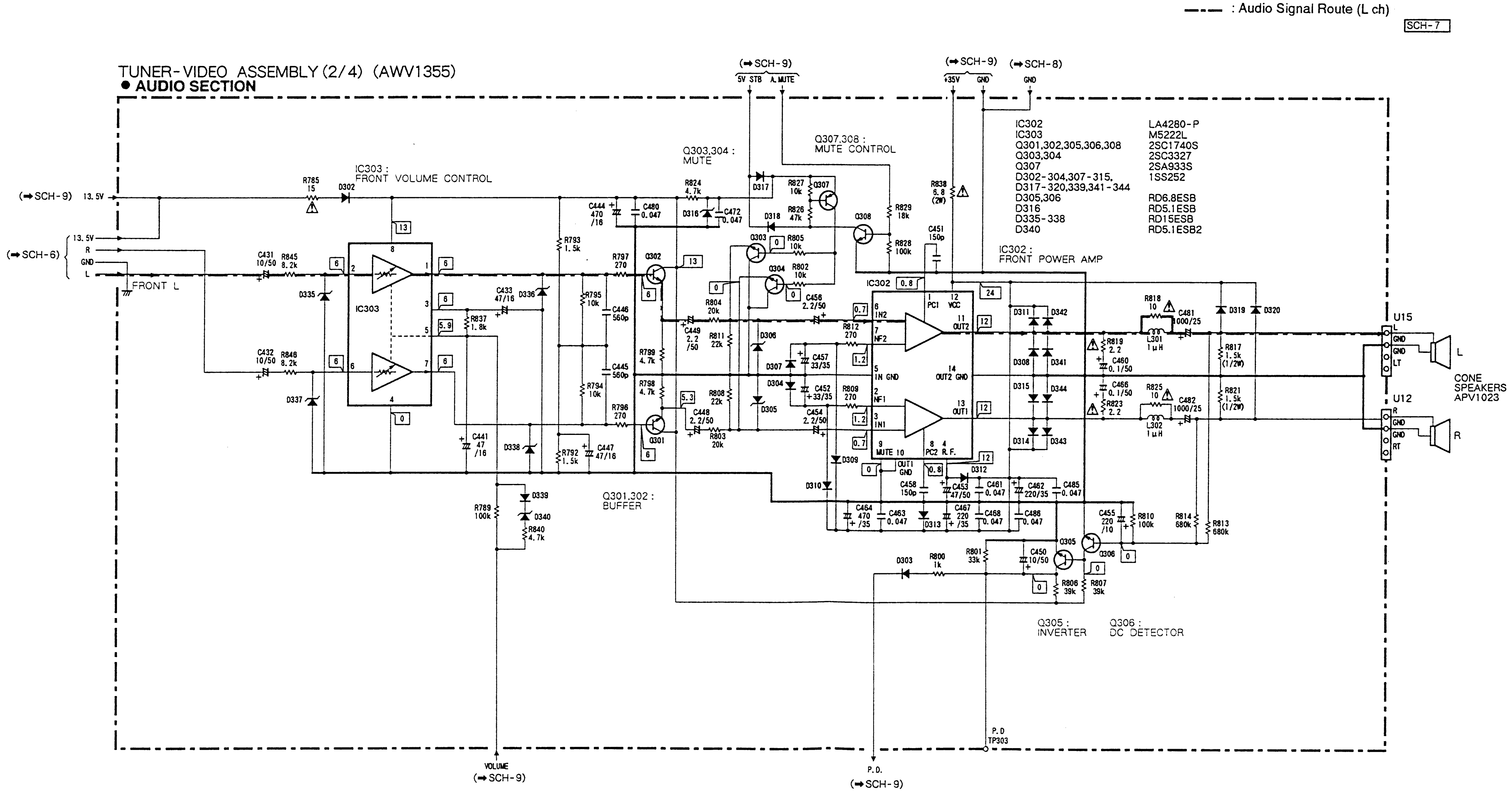
IC351	NJM4558LD
IC352	CXA1124AS
Q353,354,361,363,364,366	2SC1740S
Q355,365	2SA933S
Q356	2SD438
Q367,368	XDC124ES
D351-360,363-373	1SS252
D361	RD30ESB3
D362	RD5.6ESB3
D374	RD15ESB

*2
TRUTH TABLE OF MTS0 AND MTS1.

MTS DISP.	MTS0	MTS1
MAIN	H	L
SAP	L	H
MAIN/SAP	L	L
MONO	H	H

▭ : DC voltage (V) at 9 ch color bar signal input.

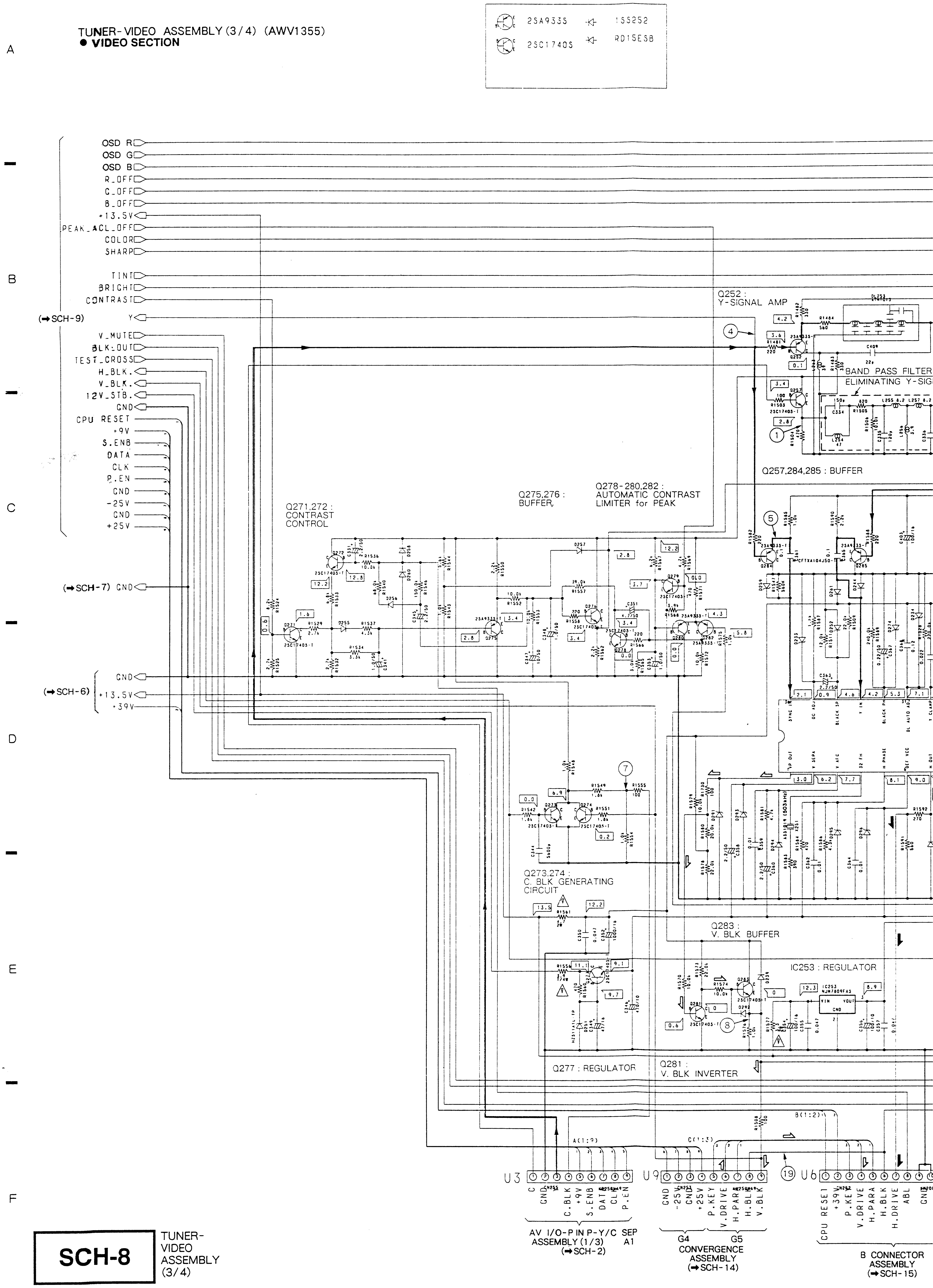
6.7 TUNER–VIDEO ASSEMBLY (2/4)



: Audio Signal Route (L ch)
SCH-7
TUNER-VIDEO ASSEMBLY (2/4) (AWV1355)
● AUDIO SECTION
(➡SCH-9)
5V STB
A.MUTE
(➡SCH-9)
+35V
GND
(➡SCH-8)
GND
IC302
IC303
Q301,302,305,306,308
Q303,304
Q307
D302-304,307-315,
D317-320,339,341-344
D305,306
D316
D335-338
D340
LA4280-P
M5222L
2SC1740S
2SC3327
2SA933S
1SS252
RD6.8ESB
RD5.1ESB
RD15ESB
RD5.1ESB2
IC302 :
FRONT POWER AMP
IC303 :
FRONT VOLUME CONTROL
Q303,304 :
MUTE
Q307,308 :
MUTE CONTROL
Q301,302 :
BUFFER
Q305 :
INVERTER
Q306 :
DC DETECTOR
(➡SCH-9) 13.5V
(➡SCH-6)
13.5V
R
GND
L
FRONT L
U15
U12
L
R
CONE
SPEAKERS
APV1023
VOLUME
(➡SCH-9)
P.D.
(➡SCH-9)
P.D
TP303

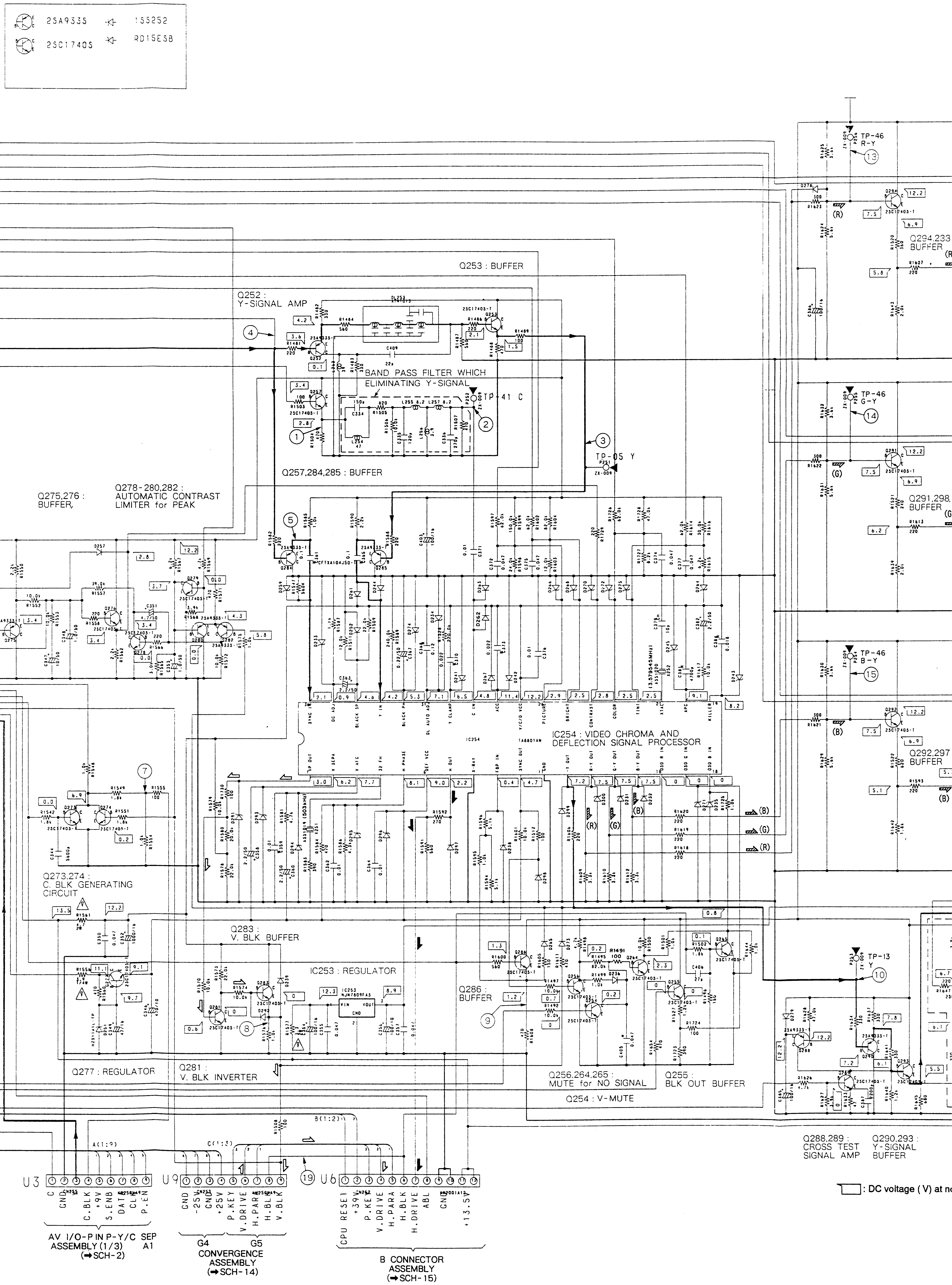
: DC voltage (V) at belows measuring condition.
Video signal : Color bar input
Audio signal : No input
VOL : 0

6.8 TUNER–VIDEO ASSEMBLY (3/4)


1
2
3
4
A
B
C
D
E
F
2SA933S
2SC1740S
1SS252
RD15ESB
TUNER-VIDEO ASSEMBLY (3/4) (AWV1355)
● VIDEO SECTION
OSD R
OSD G
OSD B
R_OFF
G_OFF
B_OFF
+13.5V
PEAK_ACL_OFF
COLOR
SHARP
TINT
BRIGHT
CONTRAST
(➡SCH-9)
Y
V_MUTE
BLK_OUT
TEST_CROSS
H_BLK.
V_BLK.
12V_STB.
GND
CPU RESET
+9V
S.ENB
DATA
CLK
P.EN
GND
-25V
GND
+25V
(➡SCH-7) GND
GND
(➡SCH-6)
+13.5V
+39V
Q252 :
Y-SIGNAL AMP
BAND PASS FILTER
ELIMINATING Y-SIG
Q257,284,285 : BUFFER
Q271,272 :
CONTRAST
CONTROL
Q275,276 :
BUFFER
Q278-280,282 :
AUTOMATIC CONTRAST
LIMITER for PEAK
Q273,274 :
C. BLK GENERATING
CIRCUIT
Q283 :
V. BLK BUFFER
IC253 : REGULATOR
Q277 : REGULATOR
Q281 :
V. BLK INVERTER
IC253
NJM7809FA5
VIN
VOUT
GND
CFTXA104J50
SYNC
DC ADJ
BLACK SP
Y IN
BLACK PK
DL AUTO ADJ
Y CLAMP
VP OUT
V SEPA
V AFC
32 FH
H PHASE
DEF VCC
H OUT
DL253
④
①
⑤
⑦
⑧
⑲
A(1:9)
B(1:2)
C(1:3)
U3
CN253
C
GND
C.BLK
+9V
S.ENB
DATA
CLK
P.EN
U9
CN254
GND
-25V
GND
+25V
P.KEY
V.DRIVE
H.PARA
H.BLK
V.BLK
U6
CN252
CPU RESET
+39V
P.KEY
V.DRIVE
H.PARA
H.BLK
H.DRIVE
ABL
GND
AV I/O-P IN P-Y/C SEP
ASSEMBLY (1/3) A1
(➡SCH-2)
G4
G5
CONVERGENCE
ASSEMBLY
(➡SCH-14)
B CONNECTOR
ASSEMBLY
(➡SCH-15)

SCH-8

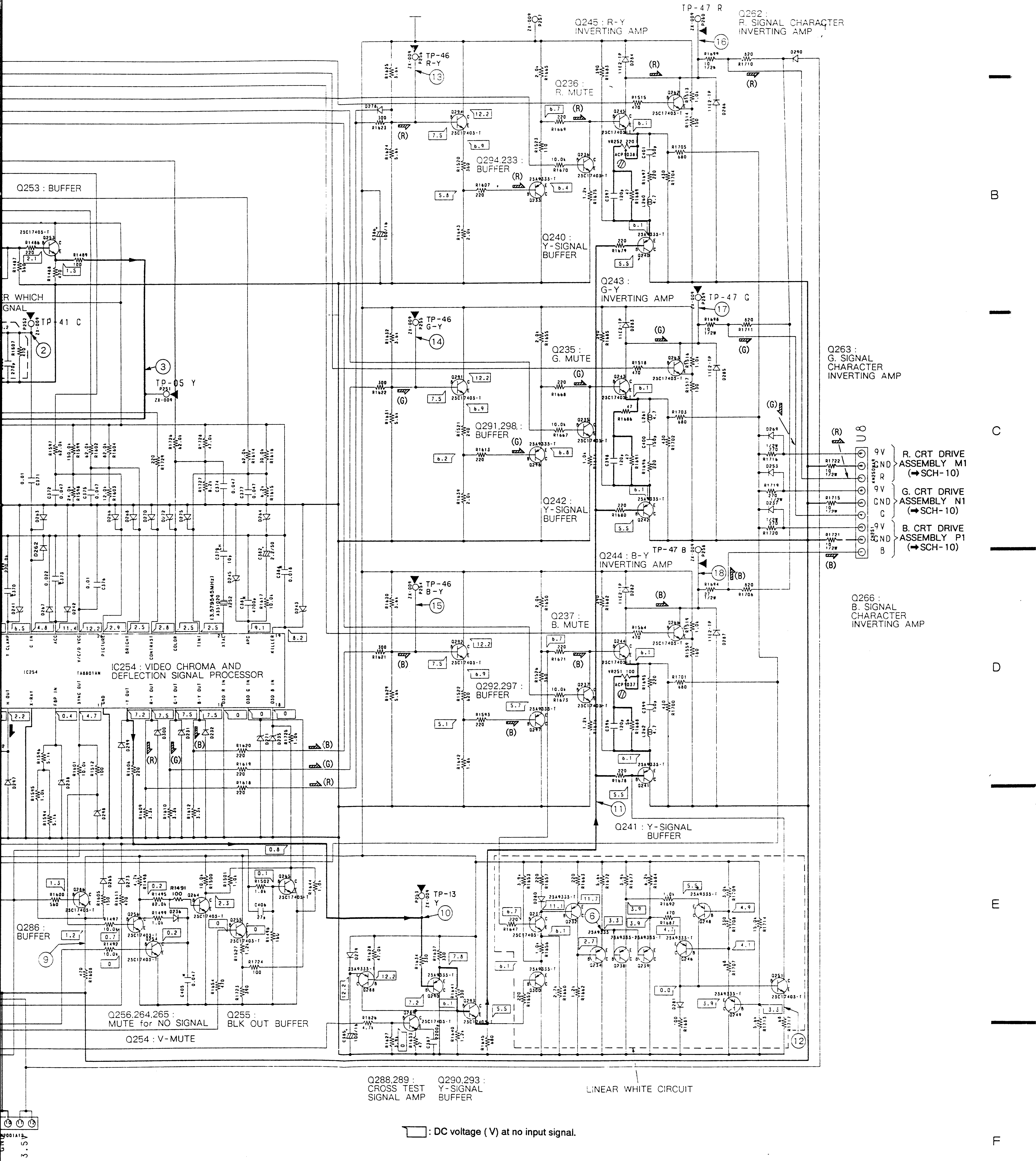
TUNER-
VIDEO
ASSEMBLY
(3/4)


2SA933S
2SC1740S
1SS252
RD15ESB
Q253 : BUFFER
Q252 : Y-SIGNAL AMP
BAND PASS FILTER WHICH ELIMINATING Y-SIGNAL
TP-41 C
TP-05 Y
Q257,284,285 : BUFFER
Q275,276 : BUFFER
Q278-280,282 : AUTOMATIC CONTRAST LIMITER for PEAK
IC254 : VIDEO CHROMA AND DEFLECTION SIGNAL PROCESSOR
TA8801AN
Q273,274 : C. BLK GENERATING CIRCUIT
Q283 : V. BLK BUFFER
IC253 : REGULATOR
NJM7809FA
Q277 : REGULATOR
Q281 : V. BLK INVERTER
Q286 : BUFFER
Q256,264,265 : MUTE for NO SIGNAL
Q255 : BLK OUT BUFFER
Q254 : V-MUTE
TP-46 R-Y
TP-46 G-Y
TP-46 B-Y
TP-13 Y
Q294,233 BUFFER
Q291,298, BUFFER
Q292,297 BUFFER
Q288,289 : CROSS TEST SIGNAL AMP
Q290,293 : Y-SIGNAL BUFFER
U3
C GND C.BLK +9V S.ENB DATA CLK P.EN
AV I/O-PIN P-Y/C SEP ASSEMBLY (1/3) A1 (➡SCH-2)
U9
GND -25V GND +25V P.KEY V.DRIVE H.PARA H.BLK V.BLK
G4 G5 CONVERGENCE ASSEMBLY (➡SCH-14)
U6
CPU RESET +39V P.KEY V.DRIVE H.PARA H.BLK H.DRIVE ABL GND +13.5V
B CONNECTOR ASSEMBLY (➡SCH-15)
A(1:9)
B(1:2)
C(1:3)
(R)
(G)
(B)
①
②
③
④
⑤
⑦
⑧
⑨
⑩
⑬
⑭
⑮
⑲

: DC voltage (V) at no

SCH – 8

—— : RF, IF, Video & Y-signal Route
➡ : H. Deflection Route
⇨ : V. Deflection Route
(R) ▨ : R. Signal Route
(G) ▨ : G. Signal Route
(B) ▨ : B. Signal Route

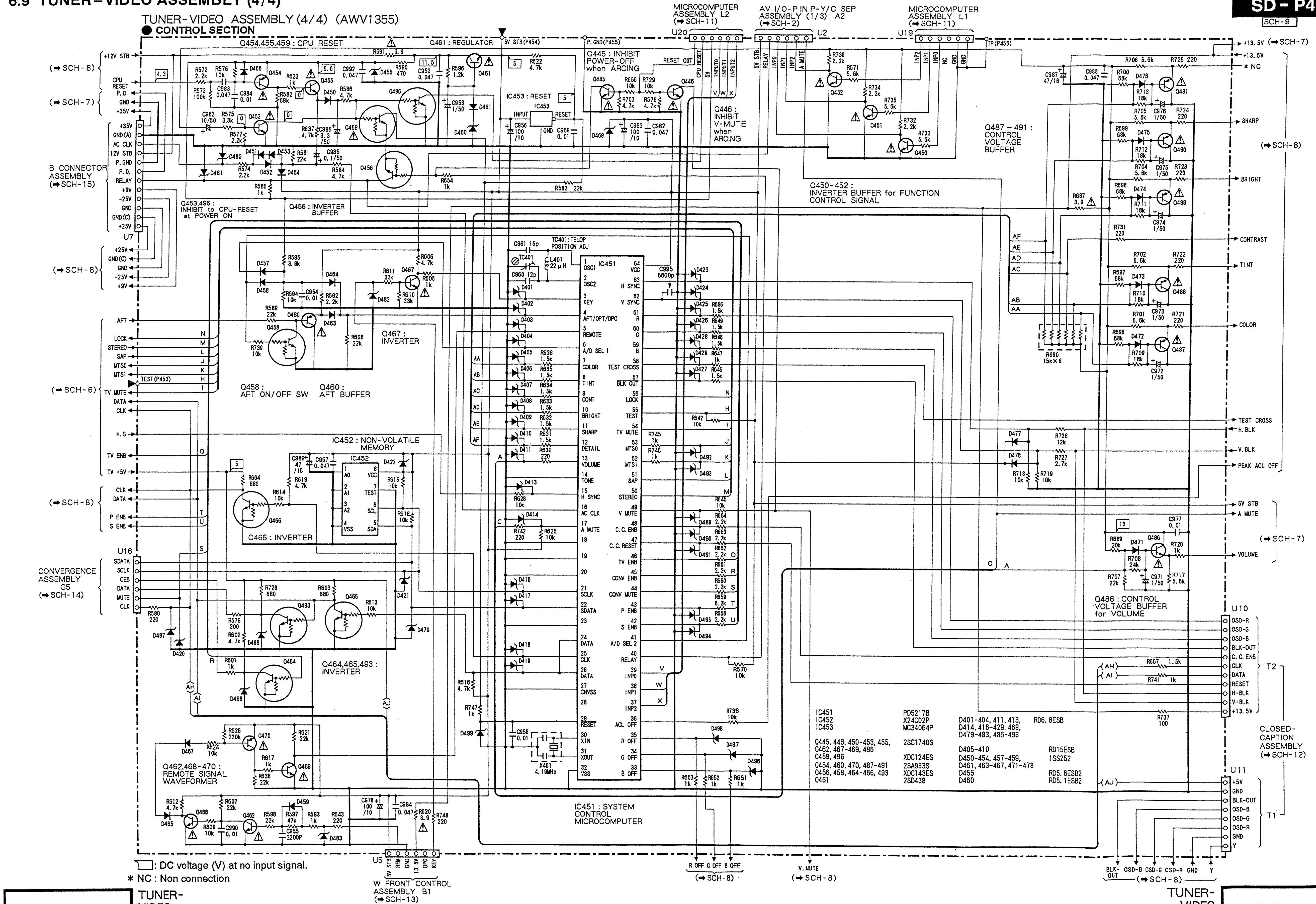

Q245 : R-Y INVERTING AMP
TP-47 R
Q262 : R. SIGNAL CHARACTER INVERTING AMP
TP-46 R-Y
Q236 : R. MUTE
Q294,233 : BUFFER
Q240 : Y-SIGNAL BUFFER
Q253 : BUFFER
R WHICH
GNAL
TP-41 C
TP-05 Y
Q243 : G-Y INVERTING AMP
TP-47 G
TP-46 G-Y
Q235 : G. MUTE
Q291,298 : BUFFER
Q242 : Y-SIGNAL BUFFER
Q263 : G. SIGNAL CHARACTER INVERTING AMP
U8
9V GND R
R. CRT DRIVE ASSEMBLY M1 (➡SCH-10)
9V GND G
G. CRT DRIVE ASSEMBLY N1 (➡SCH-10)
9V GND B
B. CRT DRIVE ASSEMBLY P1 (➡SCH-10)
Q244 : B-Y INVERTING AMP
TP-47 B
TP-46 B-Y
Q237 : B. MUTE
Q266 : B. SIGNAL CHARACTER INVERTING AMP
Q292,297 : BUFFER
IC254 : VIDEO CHROMA AND DEFLECTION SIGNAL PROCESSOR
IC254 TA8801AN
Y CLAMP
C IN
ACC
V/C/D VCC
PICTURE
BRIGHT
CONTRAST
COLOR
TINT
XTAL
APC
KILLER
H OUT
X-RAY
FBP IN
SYNC OUT
GND
Y OUT
R-Y OUT
G-Y OUT
B-Y OUT
OSD R IN
OSD G IN
OSD B IN
13.579545MHz
Q241 : Y-SIGNAL BUFFER
TP-13 Y
Q286 : BUFFER
Q256,264,265 : MUTE for NO SIGNAL
Q255 : BLK OUT BUFFER
Q254 : V-MUTE
Q288,289 : CROSS TEST SIGNAL AMP
Q290,293 : Y-SIGNAL BUFFER
LINEAR WHITE CIRCUIT
+13.5V
GND
(R)
(G)
(B)
2
3
6
9
10
11
12
13
14
15
16
17
18

▭ : DC voltage (V) at no input signal.

TUNER-
VIDEO
ASSEMBLY
(3/4)

SCH-8

6.9 TUNER–VIDEO ASSEMBLY (4/4)


TUNER-VIDEO ASSEMBLY (4/4) (AWV1355)
● CONTROL SECTION
Q454,455,459 : CPU RESET
Q461 : REGULATOR
5V STB (P454)
P. GND (P455)
TP (P456)
MICROCOMPUTER ASSEMBLY L2 (→SCH-11)
U20
AV I/O-PIN P-Y/C SEP ASSEMBLY (1/3) A2 (→SCH-2)
U2
MICROCOMPUTER ASSEMBLY L1 (→SCH-11)
U19
Q445 : INHIBIT POWER-OFF when ARCING
Q446 : INHIBIT V-MUTE when ARCING
IC453 : RESET
Q453,496 : INHIBIT to CPU-RESET at POWER ON
Q456 : INVERTER BUFFER
Q450-452 : INVERTER BUFFER for FUNCTION CONTROL SIGNAL
Q487 - 491 : CONTROL VOLTAGE BUFFER
B CONNECTOR ASSEMBLY (→SCH-15)
U7
(→SCH-8)
(→SCH-7)
(→SCH-6)
TC401 : TELOP POSITION ADJ
IC451
Q467 : INVERTER
Q458 : AFT ON/OFF SW
Q460 : AFT BUFFER
IC452 : NON-VOLATILE MEMORY
Q466 : INVERTER
CONVERGENCE ASSEMBLY G5 (→SCH-14)
U16
Q464,465,493 : INVERTER
Q462,468-470 : REMOTE SIGNAL WAVEFORMER
X451 4.19MHz
IC451 : SYSTEM CONTROL MICROCOMPUTER
Q486 : CONTROL VOLTAGE BUFFER for VOLUME
U10
T2
CLOSED-CAPTION ASSEMBLY (→SCH-12)
U11
T1
U5
W FRONT CONTROL ASSEMBLY B1 (→SCH-13)
R OFF G OFF B OFF (→SCH-8)
V. MUTE (→SCH-8)
BLK-OUT OSD-B OSD-G OSD-R GND Y (→SCH-8)
+13.5V (→SCH-7)
SHARP
BRIGHT
CONTRAST
TINT
COLOR
TEST CROSS
H. BLK
V. BLK
PEAK ACL OFF
5V STB
A MUTE
VOLUME

IC451	PD5217B	D401-404, 411, 413, D414, 416-429, 469, D479-483, 486-499	RD6.8ESB
IC452	X24C02P		
IC453	MC34064P		
Q445, 446, 450-453, 455, Q462, 467-469, 486	2SC1740S	D405-410	RD15ESB
Q459, 496	XDC124ES	D450-454, 457-459, D461, 463-467, 471-478	1SS252
Q454, 460, 470, 487-491	2SA933S		
Q456, 458, 464-466, 493	XDC143ES	D455	RD5.6ESB2
Q461	2SD438	D460	RD5.1ESB2

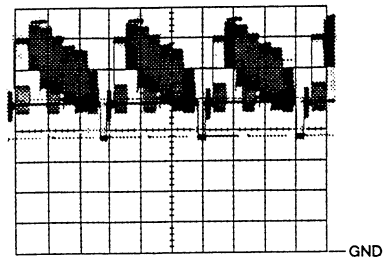
▭ : DC voltage (V) at no input signal.

* NC : Non connection

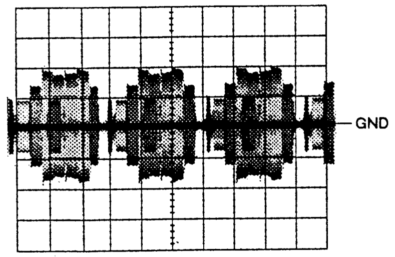
● Waveformes at TUNER–VIDEO assembly

- Input signal : Color bar
- Picture quality : standard
- Range : DC range (Unless otherwise noted.)

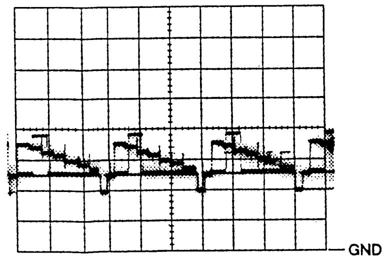
① **Q257 Emitter**
V range : 0.5V/div.
H range : 20 µsec/div.



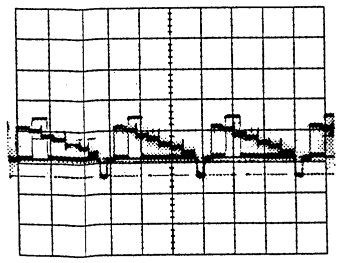
② **TP-41 (C)**
V range : 50mV/div.
H range : 20 µsec/div.



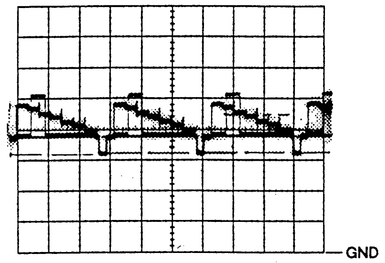
③ **TP-05 (Y)**
V range : 0.5V/div.
H range : 20 µsec/div.



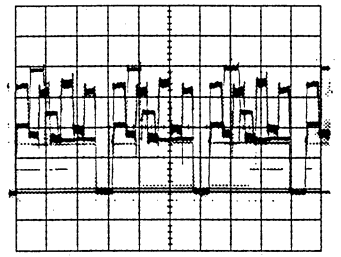
④ **U3 pin Y**
V range : 1V/div.
H range : 20 µsec/div.



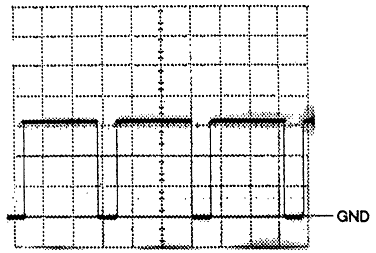
⑤ **Q284 Emitter**
V range : 1V/div.
H range : 20 µsec/div.



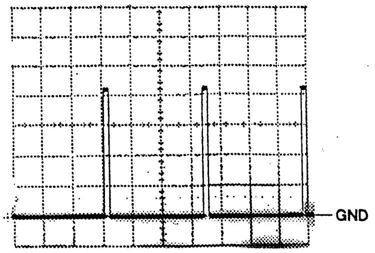
⑥ **Q234 Emitter**
V range : 1V/div.
H range : 20 µsec/div.



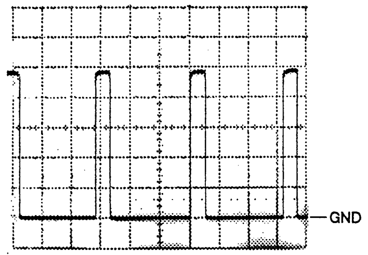
⑦ **Between R1549 and R1555**
V range : 1V/div.
H range : 20 µsec/div.



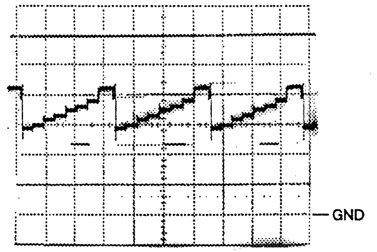
⑧ **Q283 Emitter**
V range : 2V/div.
H range : 5msec/div.



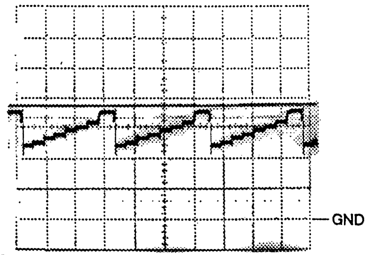
⑨ **Q286 Emitter**
V range : 2V/div.
H range : 20 µsec/div.



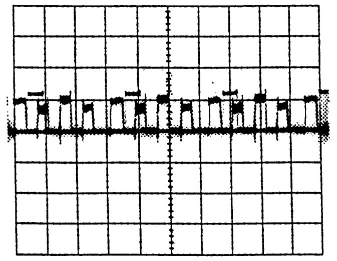
⑩ **TP-13**
V range : 2V/div.
H range : 20 µsec/div.



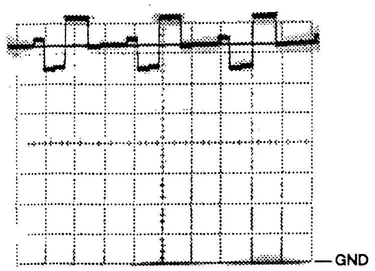
⑪ **Q293 Emitter**
V range : 2V/div.
H range : 20 µsec/div.



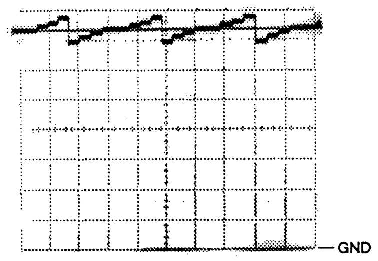
⑫ **Q251 Emitter**
V range : 0.2V/div.
H range : 20 µsec/div.



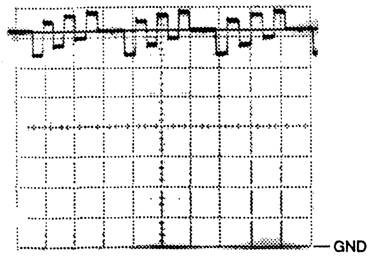
⑬ **TP-46 (R-Y)**
V range : 1V/div.
H range : 20 µsec/div.



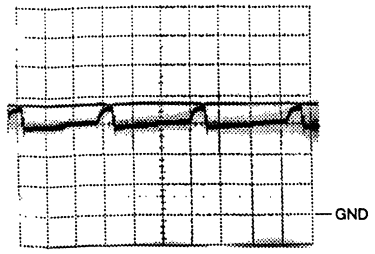
⑭ **TP-46(G-Y)**
V range : 1V/div.
H range : 20 µsec/div.



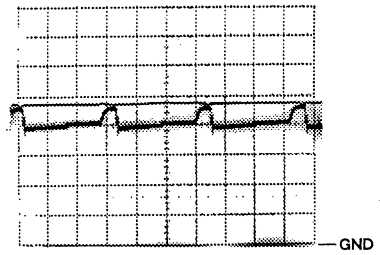
⑮ **TP-46 (B-Y)**
V range : 1V/div.
H range : 20 µsec/div.



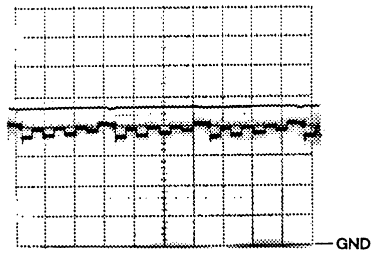
⑯ **TP-47 (R)**
V range : 2V/div.
H range : 20 µsec/div.



⑰ **TP-47 (G)**
V range : 2V/div.
H range : 20 µsec/div.



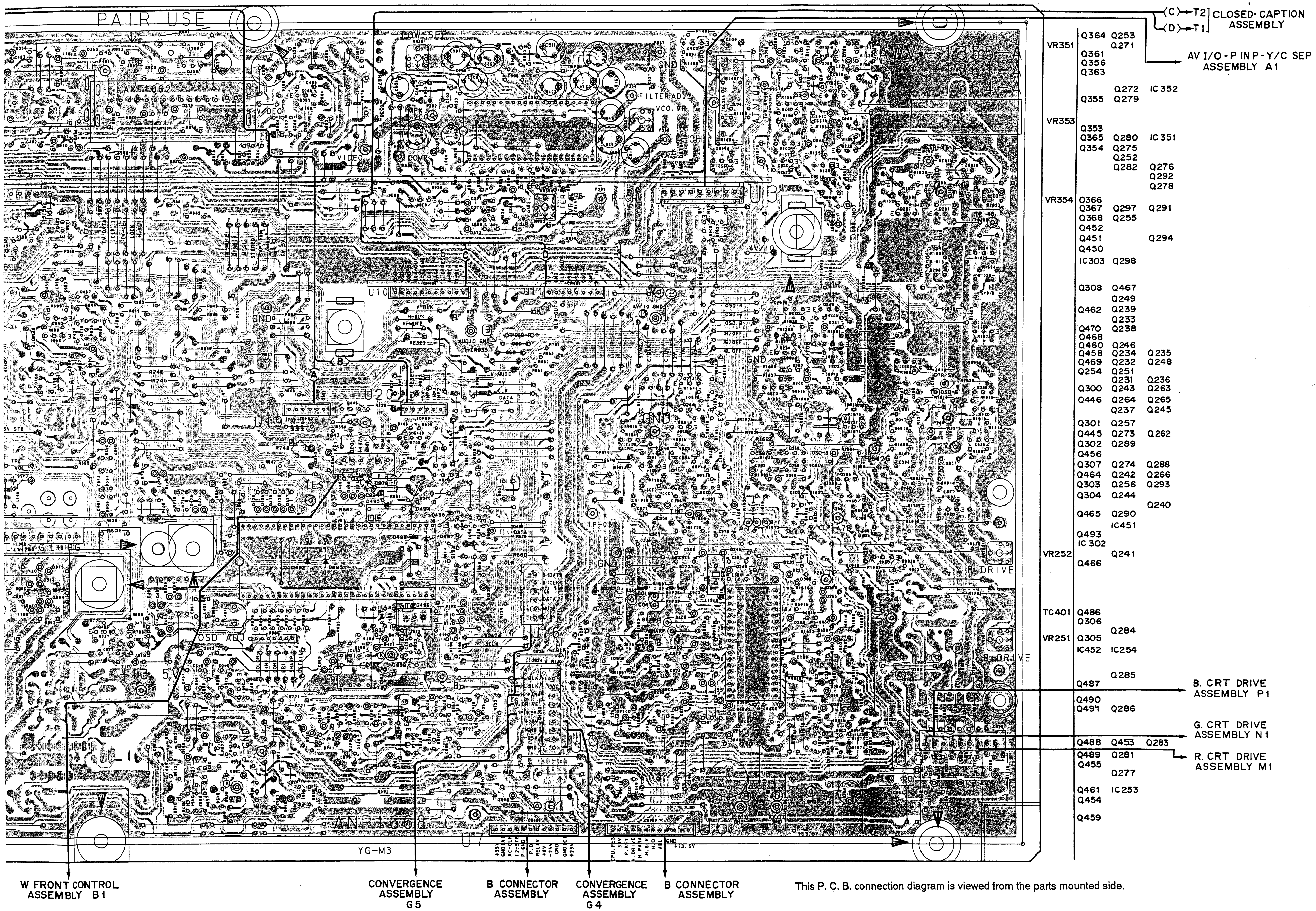
⑱ **TP-47 (B)**
V range : 2V/div.
H range : 20 µsec/div.



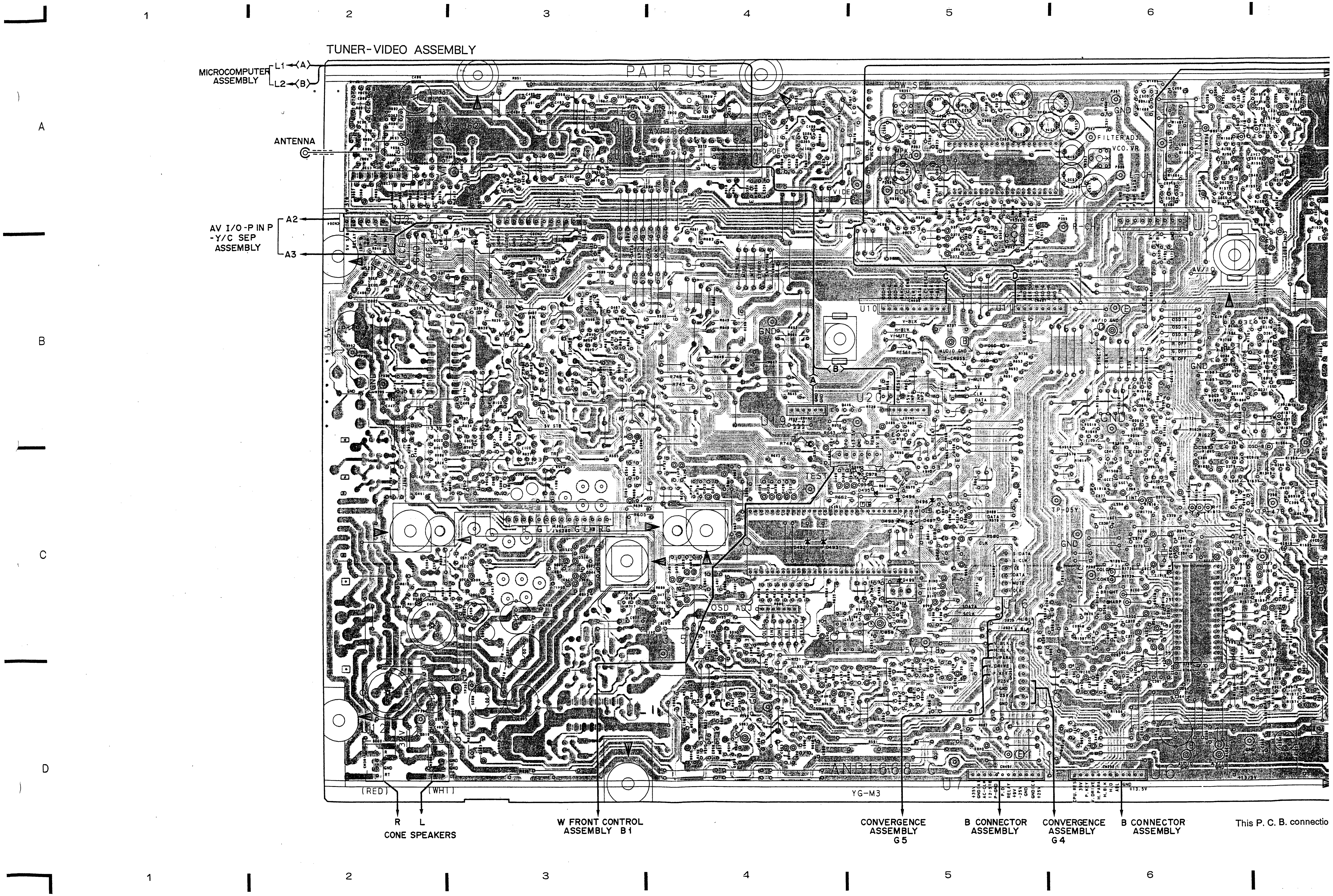
⑲

Note :
No. ⑲ waveform is indicated in SCH-10.

PCB-3


3
4
5
6
7
8
A
B
C
D
PAIR USE
AXF1062
LOW SEP
FILTER ADJ
VCO.VR
VIDEO
COMP
GND
AWV-1355-A
1361-A
1364-A
AV/I
U10
U20
U19
U15
TEST
OSD ADJ
15V STB
B.DRIVE
ANP1608-C
YG-M3
(C)→T2
(D)→T1
CLOSED-CAPTION ASSEMBLY
AV I/O-P INP-Y/C SEP ASSEMBLY A1
VR351 Q364 Q253
Q271
Q361
Q356
Q363
Q272 IC352
Q355 Q279
VR353
Q353
Q365 Q280 IC351
Q354 Q275
Q252
Q282 Q276
Q292
Q278
VR354 Q366
Q367 Q297 Q291
Q368 Q255
Q452
Q451 Q294
Q450
IC303 Q298
Q308 Q467
Q249
Q462 Q239
Q233
Q470 Q238
Q468
Q460 Q246
Q458 Q234 Q235
Q469 Q232 Q248
Q254 Q251
Q231 Q236
Q300 Q243 Q263
Q446 Q264 Q265
Q237 Q245
Q301 Q257
Q445 Q273 Q262
Q302 Q289
Q456
Q307 Q274 Q288
Q464 Q242 Q266
Q303 Q256 Q293
Q304 Q244
Q240
Q465 Q290
IC451
Q493
IC 302
VR252 Q241
Q466
TC401 Q486
Q306
Q284
VR251 Q305
IC452 IC254
Q285
Q487
Q490
Q491 Q286
Q488 Q453 Q283
Q489 Q281
Q455
Q277
Q461 IC253
Q454
Q459
B. CRT DRIVE ASSEMBLY P1
G. CRT DRIVE ASSEMBLY N1
R. CRT DRIVE ASSEMBLY M1
W FRONT CONTROL ASSEMBLY B1
CONVERGENCE ASSEMBLY G5
B CONNECTOR ASSEMBLY
CONVERGENCE ASSEMBLY G4
B CONNECTOR ASSEMBLY

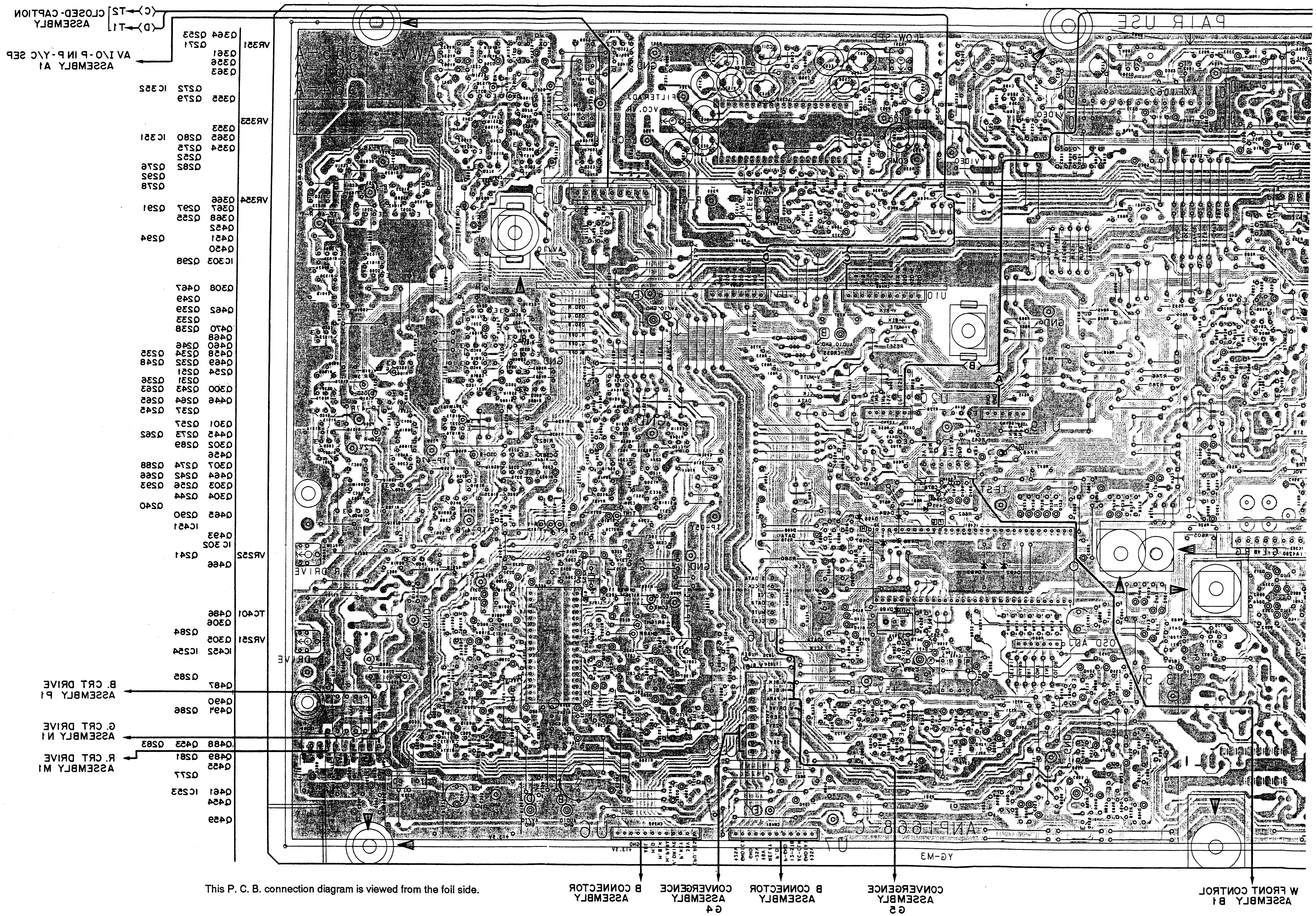
This P. C. B. connection diagram is viewed from the parts mounted side.


TUNER-VIDEO ASSEMBLY

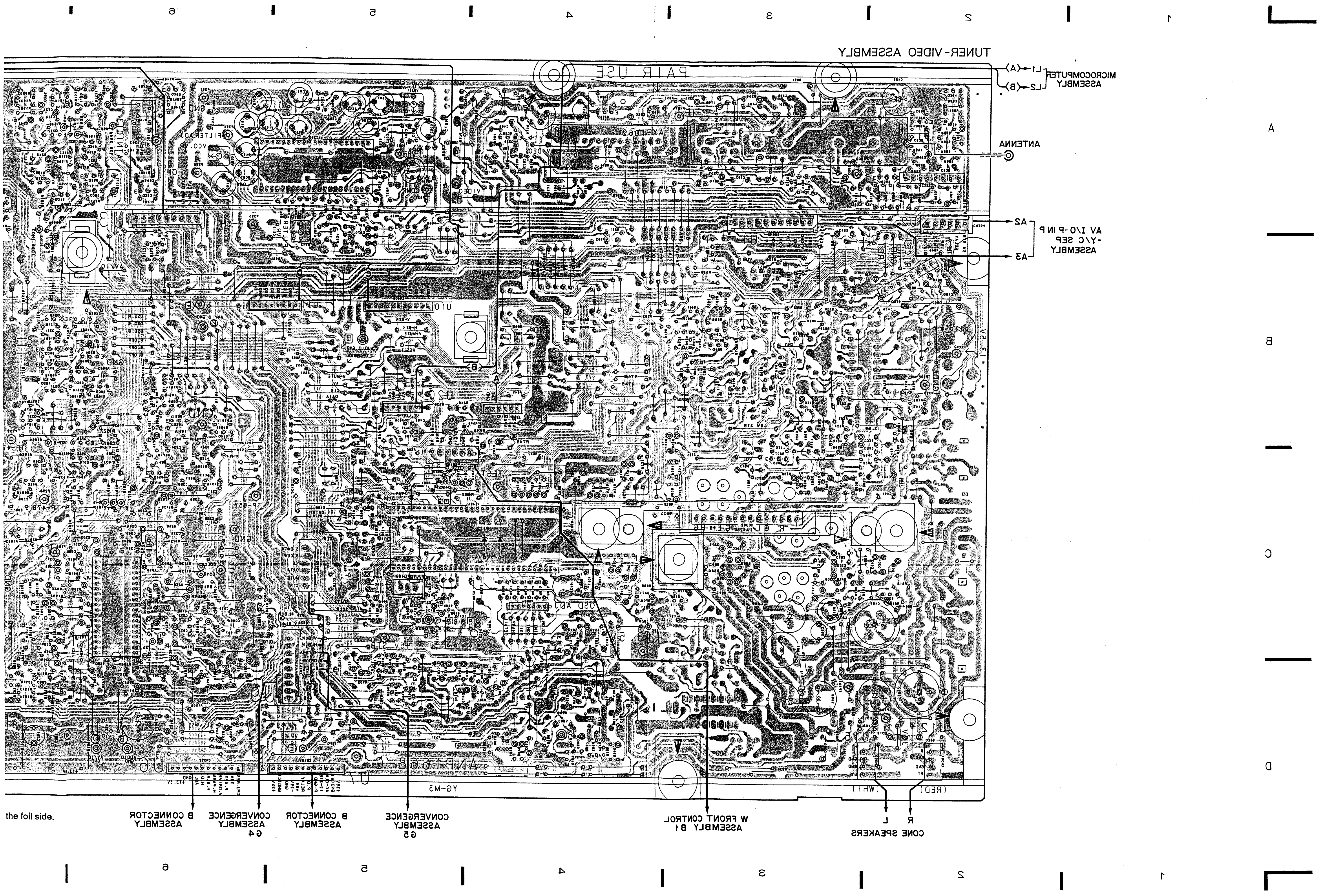
1
2
3
4
5
6
A
B
C
D
MICROCOMPUTER ASSEMBLY
L1 (A)
L2 (B)
ANTENNA
AV I/O-P IN P -Y/C SEP ASSEMBLY
A2
A3
PAIR USE
AXF1062
VIDEO
COMP
FILTER ADJ
VCO. VR
GND
U10
U11
U13
U18
U19
U20
(B)
A
TEST
OSD ADJ
5V STB
ANP1668-C
YG-M3
(RED)
(WHT)
R
L
CONE SPEAKERS
W FRONT CONTROL ASSEMBLY B1
CONVERGENCE ASSEMBLY G5
B CONNECTOR ASSEMBLY
CONVERGENCE ASSEMBLY G4
B CONNECTOR ASSEMBLY

This P. C. B. connectio

PCB-3

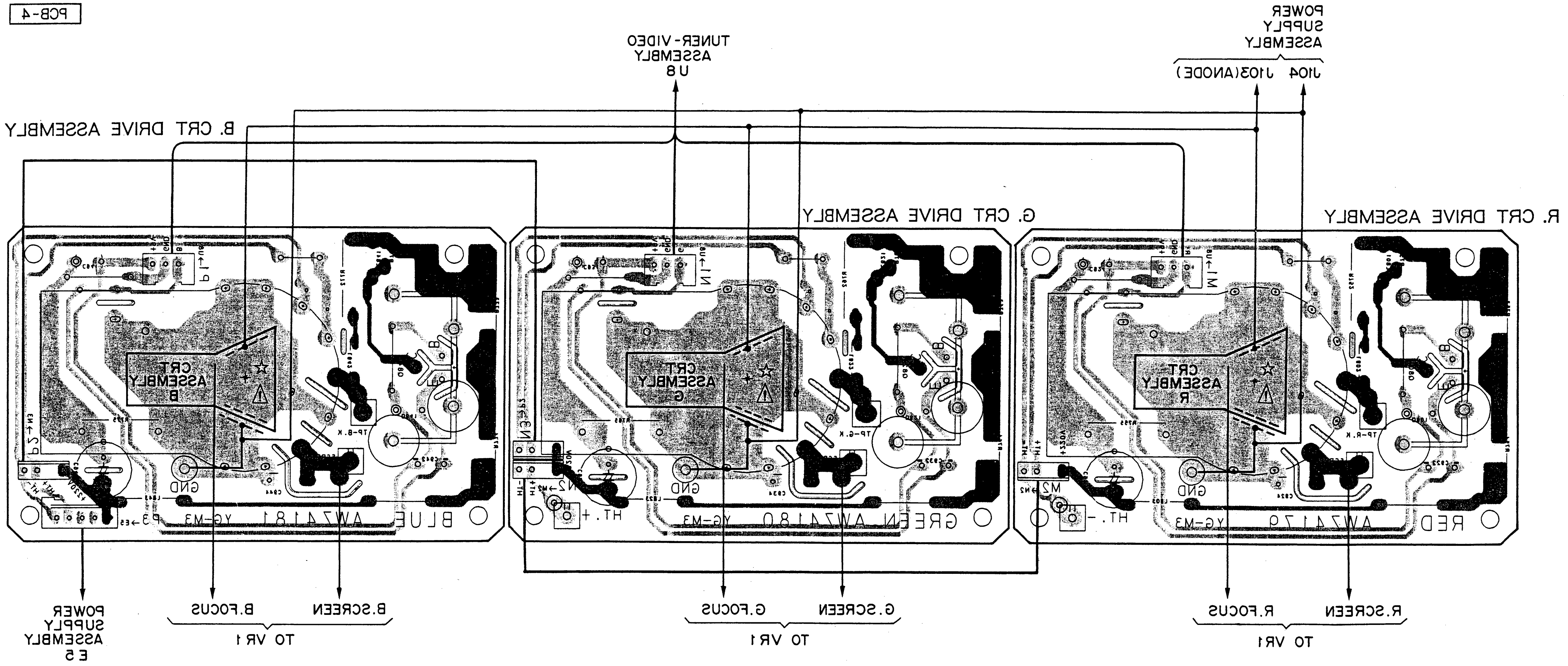

9 8 7 6 5 4
A
B
C
D
(C)→T2 CLOSED-CAPTION ASSEMBLY
(D)→T1
AV I/O-P IN P-Y/C SEP ASSEMBLY A1
VR351 Q364 Q253
Q271
Q361
Q356
Q363
Q272 IC352
Q355 Q279
VR353
Q353
Q365 Q280 IC351
Q354 Q275
Q252
Q282 Q276
Q292
Q278
VR354 Q366
Q367 Q297 Q291
Q368 Q255
Q452
Q451 Q294
Q450
IC303 Q298
Q308 Q467
Q249
Q462 Q239
Q233
Q470 Q238
Q468
Q460 Q246
Q458 Q234 Q235
Q469 Q232 Q248
Q254 Q251
Q231 Q236
Q300 Q243 Q263
Q446 Q264 Q265
Q237 Q245
Q301 Q257
Q445 Q273 Q262
Q302 Q289
Q456
Q307 Q274 Q288
Q464 Q242 Q266
Q303 Q256 Q293
Q304 Q244
Q240
Q465 Q290
IC451
Q493
IC 302
VR252 Q241
Q466
TC401 Q486
Q306
Q284
VR251 Q305
IC452 IC254
Q285
Q487
B. CRT DRIVE ASSEMBLY P1
Q490
Q491 Q286
G. CRT DRIVE ASSEMBLY N1
Q488 Q453 Q283
R. CRT DRIVE ASSEMBLY M1
Q489 Q281
Q455
Q277
Q461 IC253
Q454
Q459
PAIR USE
B CONNECTOR ASSEMBLY
CONVERGENCE ASSEMBLY G4
B CONNECTOR ASSEMBLY
CONVERGENCE ASSEMBLY G5
W FRONT CONTROL ASSEMBLY B1

This P. C. B. connection diagram is viewed from the foil side.


TUNER-VIDEO ASSEMBLY
MICROCOMPUTER ASSEMBLY
L1 (A)
L2 (B)
ANTENNA
AV I/O-P IN P -Y/C SEP ASSEMBLY
A2
A3
PAIR USE
ANP1668
YG-M3
(WHT)
(RED)
B CONNECTOR ASSEMBLY
CONVERGENCE ASSEMBLY G4
B CONNECTOR ASSEMBLY
CONVERGENCE ASSEMBLY G5
W FRONT CONTROL ASSEMBLY B1
L
R
CONE SPEAKERS
A
B
C
D
6
5
4
3
2
1

the foil side.

6.10 R., G. AND B. CRT DRIVE ASSEMBLIES

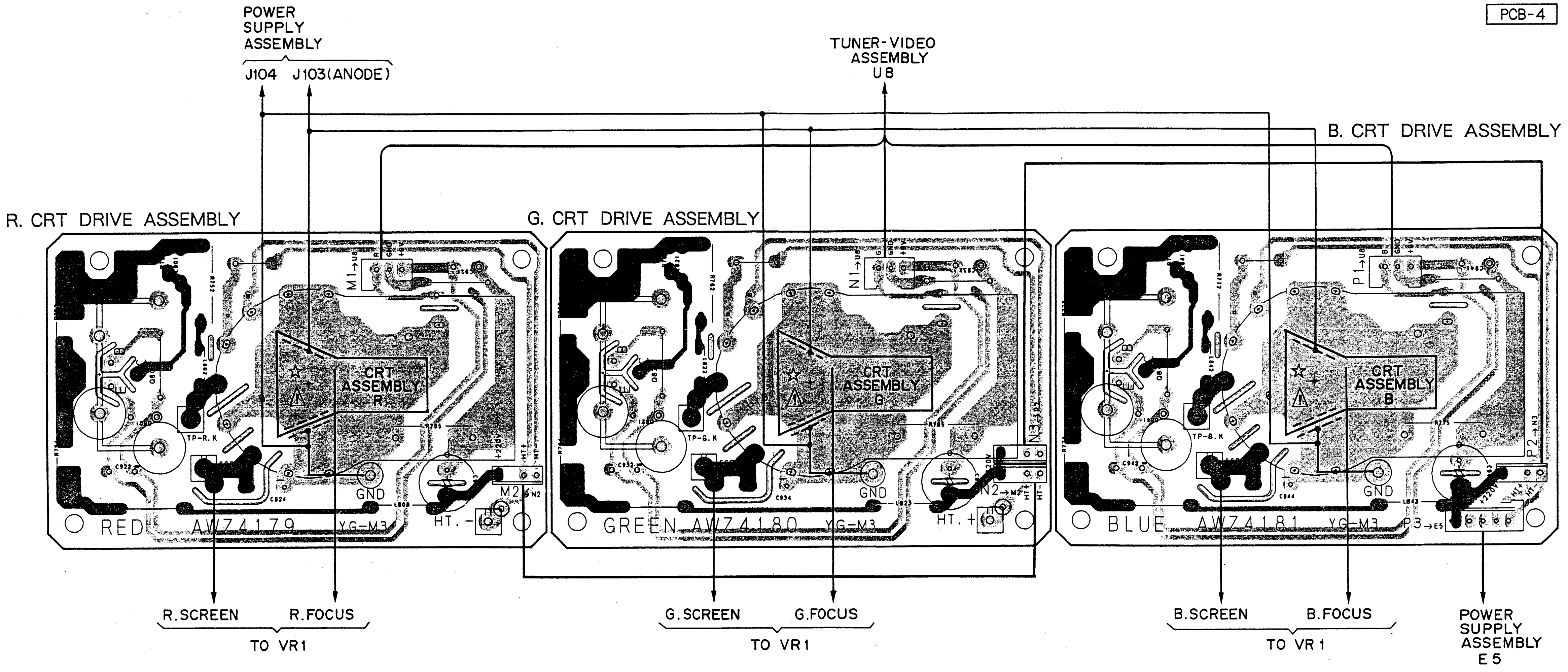

PCB-4
TUNER-VIDEO ASSEMBLY
U8
POWER SUPPLY ASSEMBLY
J104
J103(ANODE)
B. CRT DRIVE ASSEMBLY
G. CRT DRIVE ASSEMBLY
R. CRT DRIVE ASSEMBLY
CRT ASSEMBLY B
CRT ASSEMBLY G
CRT ASSEMBLY R
GND
HT.+
HT.-
BLUE AWZ4181 YG-M3
GREEN AWZ4180 YG-M3
RED AWZ4179 YG-M3
POWER SUPPLY ASSEMBLY
E5
B.SCREEN
B.FOCUS
TO VR1
G.SCREEN
G.FOCUS
TO VR1
R.SCREEN
R.FOCUS
TO VR1

This P. C. B. connection diagram is viewed from the foil side.

■ mark shows a high voltage generation point (excepting the charged section).

- Parts marked by ☆ are important parts which relate to X-ray radiation. If any of these parts need to replaced. Always replace with specified parts.

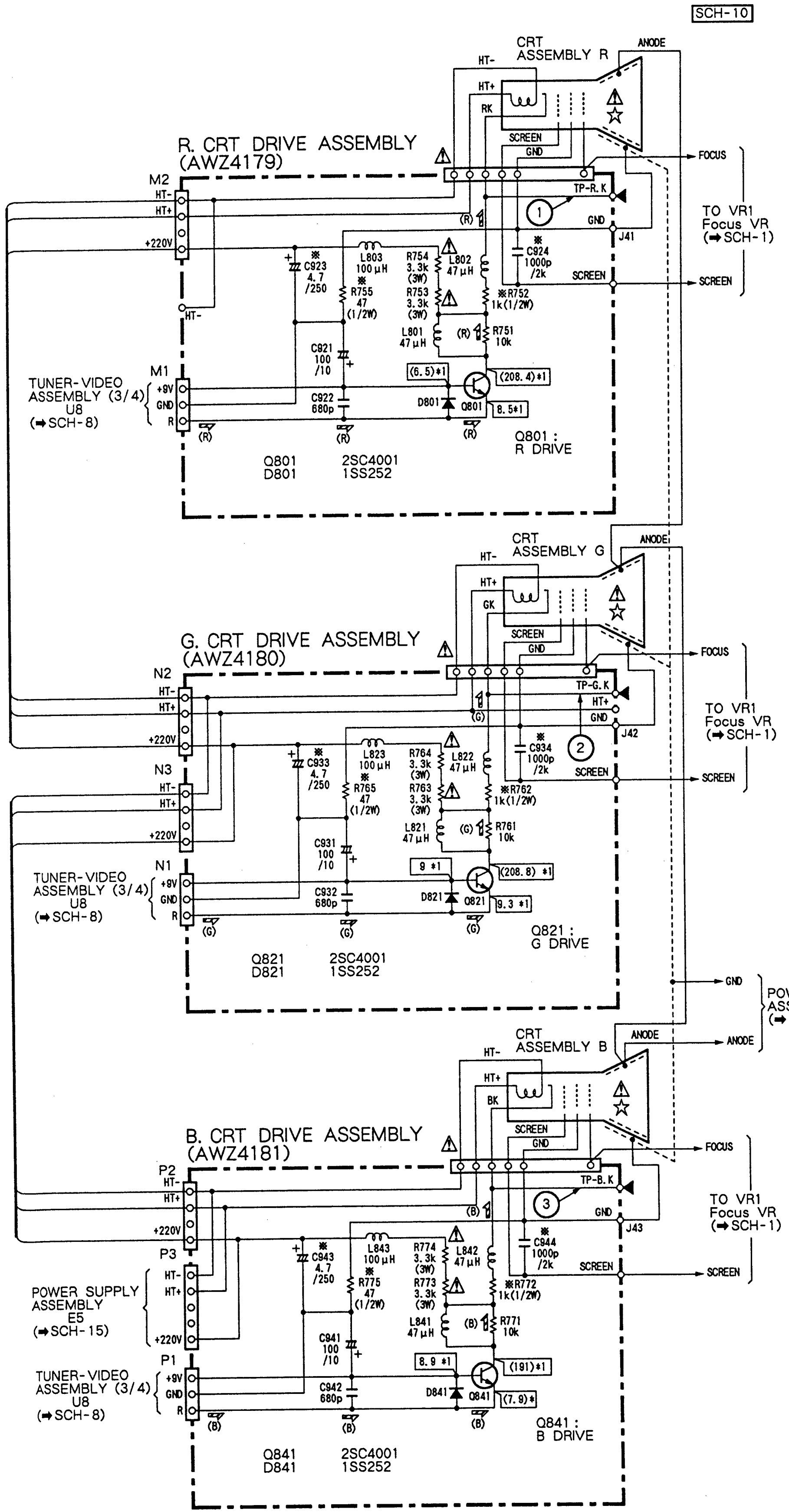
6.10 R., G. AND B. CRT DRIVE ASSEMBLIES


PCB-4
POWER SUPPLY ASSEMBLY
J104
J103(ANODE)
TUNER-VIDEO ASSEMBLY
U8
B. CRT DRIVE ASSEMBLY
R. CRT DRIVE ASSEMBLY
G. CRT DRIVE ASSEMBLY
M1→U8
N1→U8
P1→U8
CRT ASSEMBLY R
CRT ASSEMBLY G
CRT ASSEMBLY B
TP-R.K
TP-G.K
TP-B.K
GND
GND
GND
HT.-
HT.+
M2
N2→M2
N3→P2
P2→N3
P3→E5
+220V
RED AWZ4179 YG-M3
GREEN AWZ4180 YG-M3
BLUE AWZ4181 YG-M3
R.SCREEN
R.FOCUS
TO VR1
G.SCREEN
G.FOCUS
TO VR1
B.SCREEN
B.FOCUS
TO VR1
POWER SUPPLY ASSEMBLY
E5

■ mark shows a high voltage generation point (excepting the charged section).

This P. C. B. connection diagram is viewed from the parts mounted side.

- Parts marked by ☆ are important parts which relate to X-ray radiation.
  If any of these parts need to replaced. Always replace with specified parts.

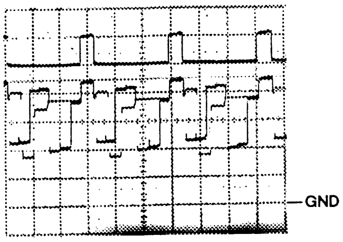

SCH-10
CRT ASSEMBLY R
ANODE
HT-
HT+
RK
SCREEN
GND
R. CRT DRIVE ASSEMBLY
(AWZ4179)
M2
HT-
HT+
+220V
TP-R.K
①
GND
J41
FOCUS
TO VR1
Focus VR
(➡SCH-1)
SCREEN
C923 4.7 /250
L803 100µH
R754 3.3k (3W)
L802 47µH
C924 1000p /2k
R755 47 (1/2W)
R753 3.3k (3W)
R752 1k(1/2W)
L801 47µH
R751 10k
C921 100 /10
M1
TUNER-VIDEO ASSEMBLY (3/4) U8 (➡SCH-8)
+9V
GND
R
(6.5)*1
(208.4)*1
C922 680p
D801
Q801
8.5*1
Q801 : R DRIVE
Q801 2SC4001
D801 1SS252
CRT ASSEMBLY G
G. CRT DRIVE ASSEMBLY
(AWZ4180)
N2
GK
TP-G.K
J42
②
C933 4.7 /250
L823 100µH
R764 3.3k (3W)
L822 47µH
C934 1000p /2k
R765 47 (1/2W)
R763 3.3k (3W)
R762 1k(1/2W)
N3
L821 47µH
R761 10k
C931 100 /10
N1
9 *1
(208.8) *1
C932 680p
D821
Q821
9.3 *1
Q821 : G DRIVE
Q821 2SC4001
D821 1SS252
GND
POWER SUPPLY ASSEMBLY
CRT ASSEMBLY B
B. CRT DRIVE ASSEMBLY
(AWZ4181)
P2
BK
TP-B.K
③
J43
C943 4.7 /250
L843 100µH
R774 3.3k (3W)
L842 47µH
C944 1000p /2k
R775 47 (1/2W)
R773 3.3k (3W)
R772 1k(1/2W)
P3
POWER SUPPLY ASSEMBLY E5 (➡SCH-15)
L841 47µH
R771 10k
C941 100 /10
P1
8.9 *1
(191)*1
C942 680p
D841
Q841
(7.9)*
Q841 : B DRIVE
Q841 2SC4001
D841 1SS252
(R)
(G)
(B)

POWER SUPPLY ASSEMBLY
(➡SCH-15)

- **Waveformes**
- Input signal : Color bar
- Picture quqlity : standard
- Range : DC range (Unless otherwise noted.)

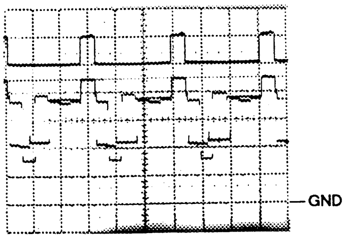
⑲ **Upper: U6 pin H. BLK**
(TUNER-VIDEO ASSEMBLY)
V range : 10V/div.
H range : 20 µsec/div.

① **Lower: TP-RK**
V range : 50V/div.
H range : 20 µsec/div.



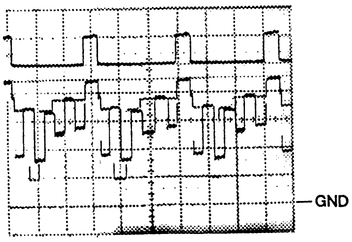
⑲ **Upper: U6 pin H. BLK**
(TUNER-VIDEO ASSEMBLY)
V range : 10V/div.
H range : 20 µsec/div.

② **Lower: TP-GK**
V range : 50V/div.
H range : 20 µsec/div.



⑲ **Upper: U6 pin H. BLK**
(TUNER-VIDEO ASSEMBLY)
V range : 10V/div.
H range : 20 µsec/div.

③ **Lower: TP-BK**
V range : 50V/div.
H range : 20 µsec/div.



*1 : DC voltage (V) is measured with the digital voltmeter at no input signal.
Value in ( ) is DC + AC mode.
(R) : R. Signal Route
(G) : G. Signal Route
(B) : B. Signal Route

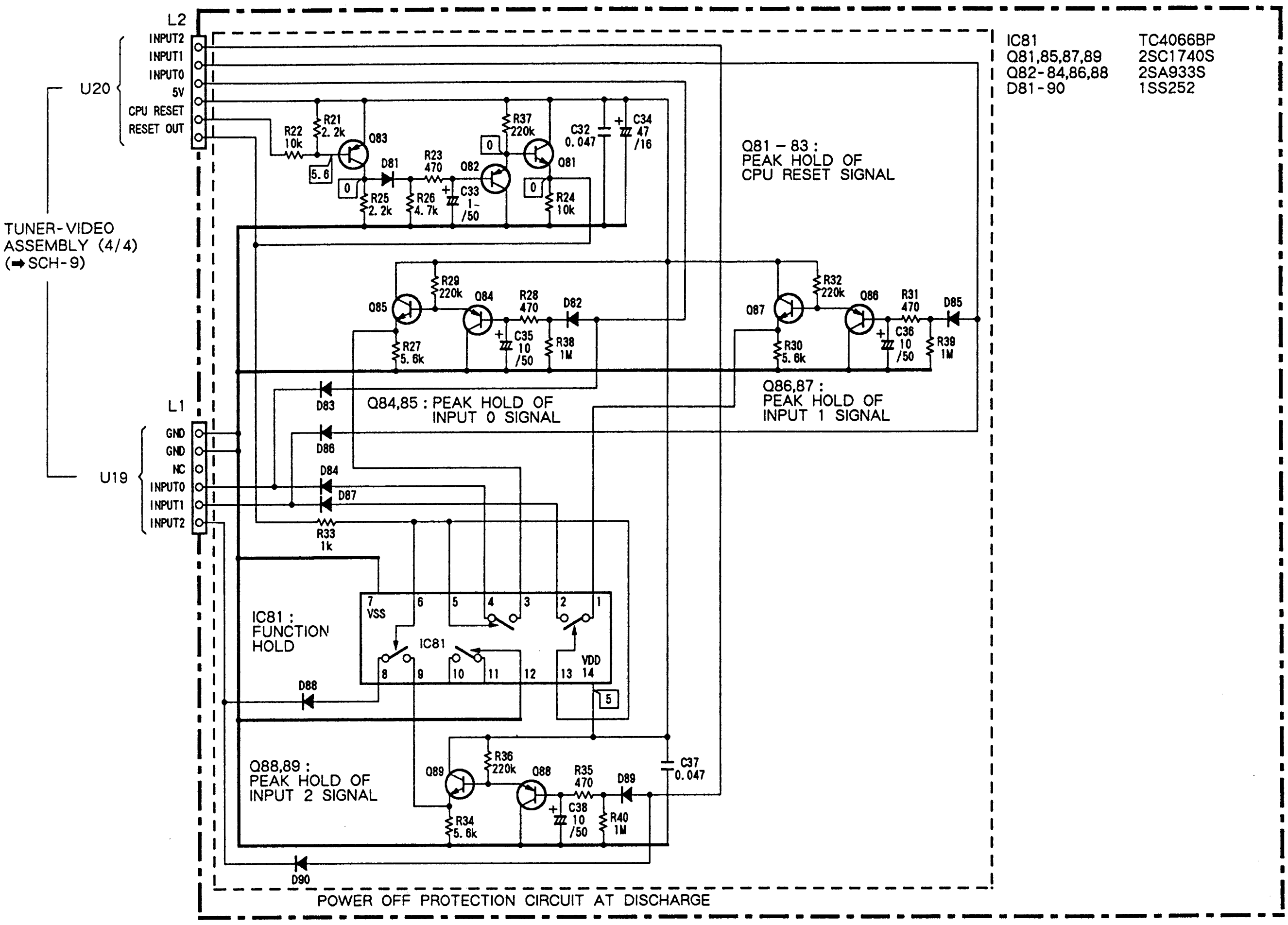
R., G. AND B.
CRT DRIVE
ASSEMBLIES

SCH-10

6.11 MICROCOMPUTER ASSEMBLY

SCH-11

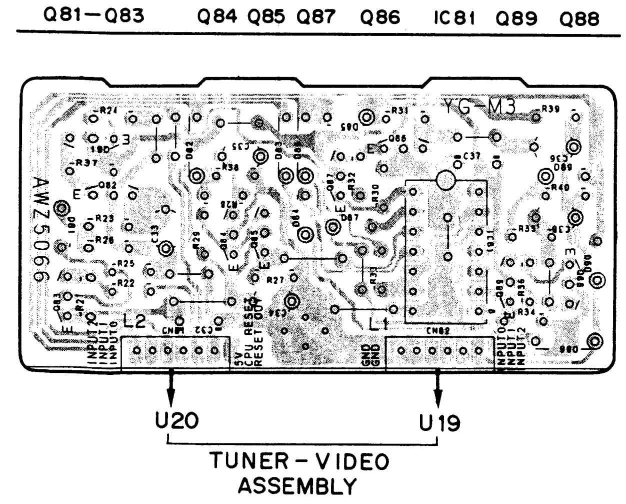
MICROCOMPUTER ASSEMBLY (AWZ5066)


L2
INPUT2
INPUT1
INPUT0
5V
CPU RESET
RESET OUT
U20
TUNER-VIDEO ASSEMBLY (4/4) (➡SCH-9)
U19
L1
GND
GND
NC
INPUT0
INPUT1
INPUT2
IC81 TC4066BP
Q81,85,87,89 2SC1740S
Q82-84,86,88 2SA933S
D81-90 1SS252
Q81 – 83 : PEAK HOLD OF CPU RESET SIGNAL
Q84,85 : PEAK HOLD OF INPUT 0 SIGNAL
Q86,87 : PEAK HOLD OF INPUT 1 SIGNAL
Q88,89 : PEAK HOLD OF INPUT 2 SIGNAL
IC81 : FUNCTION HOLD
VSS
VDD
R21 2.2k
R22 10k
R23 470
R24 10k
R25 2.2k
R26 4.7k
R27 5.6k
R28 470
R29 220k
R30 5.6k
R31 470
R32 220k
R33 1k
R34 5.6k
R35 470
R36 220k
R37 220k
R38 1M
R39 1M
R40 1M
C32 0.047
C33 1-/50
C34 47/16
C35 10/50
C36 10/50
C37 0.047
C38 10/50
5.6
0
5
POWER OFF PROTECTION CIRCUIT AT DISCHARGE

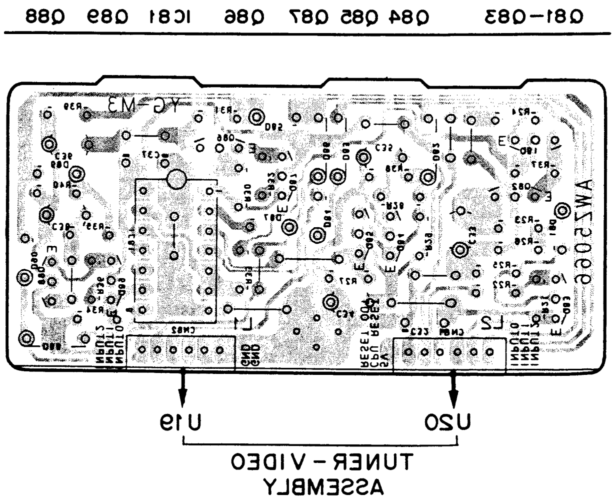
▭ : DC voltage (V) at no input signal.

PCB-5

MICROCOMPUTER ASSEMBLY


Q81–Q83
Q84 Q85 Q87
Q86
IC81
Q89
Q88
AWZ5066
L2
L1
CN82
CN83
U20
U19
TUNER – VIDEO ASSEMBLY

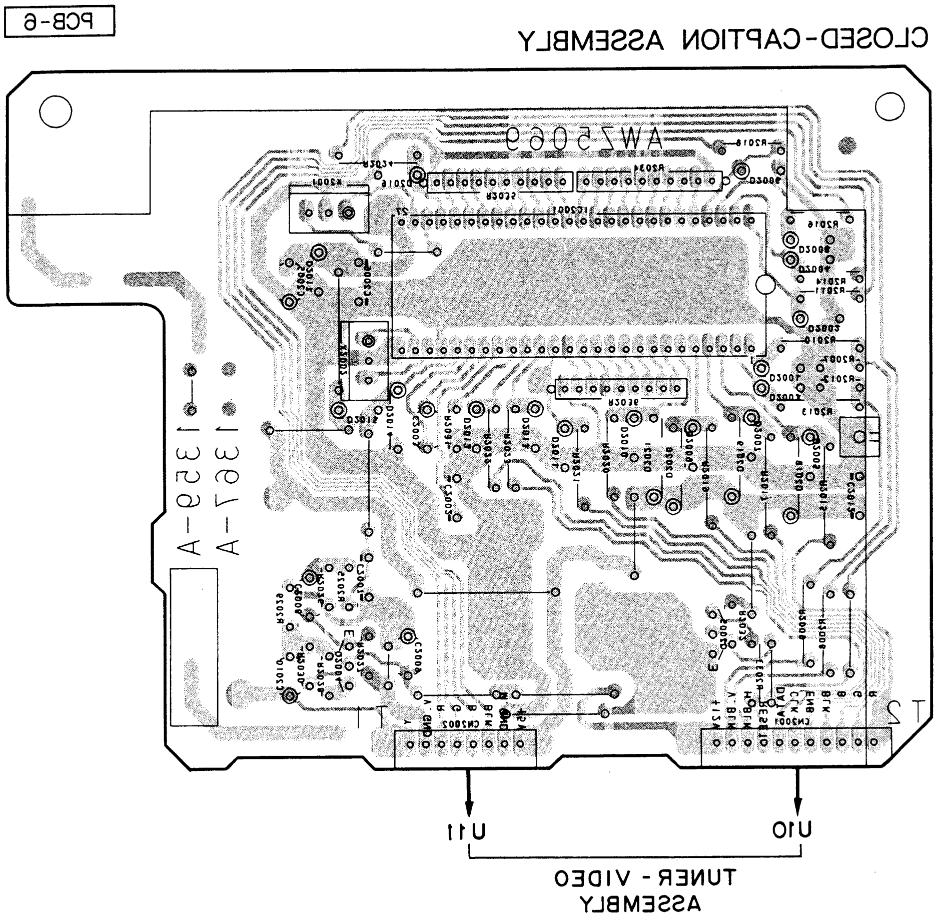
This P. C. B. connection diagram is viewed from the parts mounted side.


Q88 Q89 IC81 Q86 Q84 Q85 Q87 Q81–Q83
AWZ5066
U19
U20
TUNER – VIDEO ASSEMBLY

This P. C. B. connection diagram is viewed from the foil side.

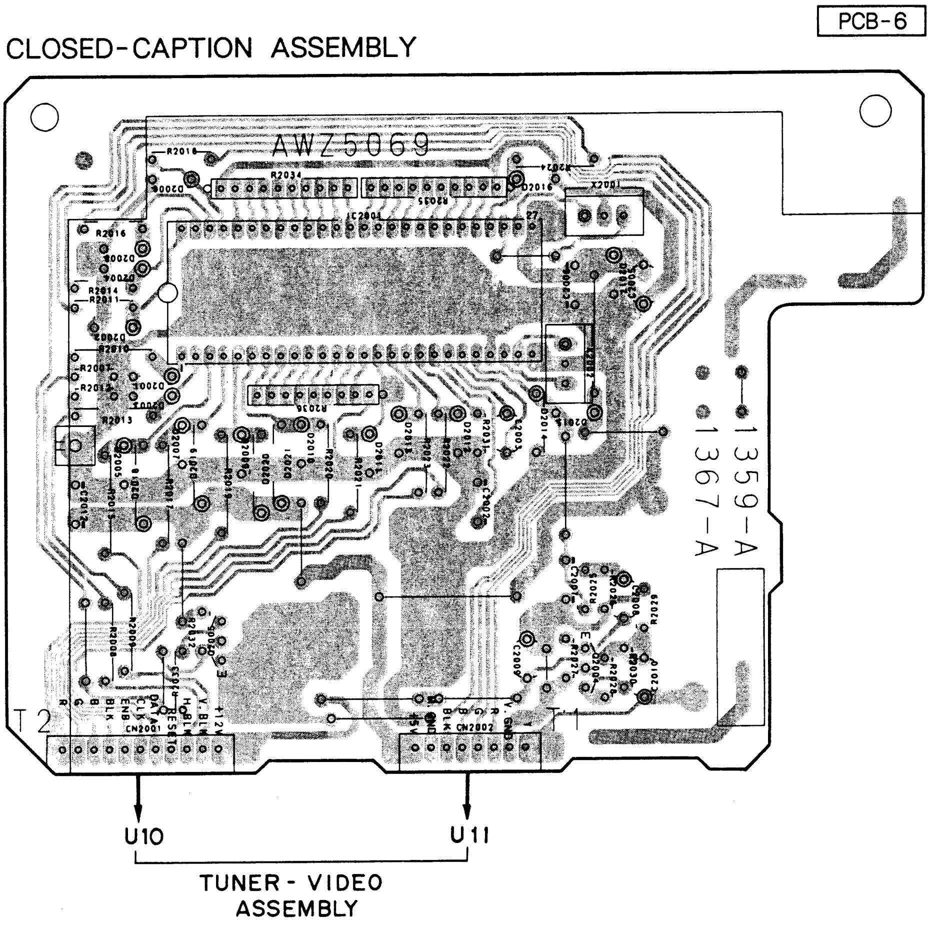
SCH-11 MICROCOMPUTER ASSEMBLY

6.12 CLOSED-CAPTION ASSEMBLY


PCB-6
CLOSED-CAPTION ASSEMBLY
AWZ5069
IC2001
CN2002
CN3001
U11
U10
TUNER - VIDEO ASSEMBLY
1359-A
1367-A

This P. C. B. connection diagram is viewed from the foil side.

6.12 CLOSED-CAPTION ASSEMBLY


PCB-6
CLOSED-CAPTION ASSEMBLY
AWZ5069
IC2001
X2001
1359-A
1367-A
T2
T1
R
G
B
BLK
ENB
CLK
DATA
RESET
H.BLK
V.BLK
+12V
CN2001
5V
GND
B
BLK
G
R
V.GND
CN2002
U10
U11
TUNER - VIDEO
ASSEMBLY

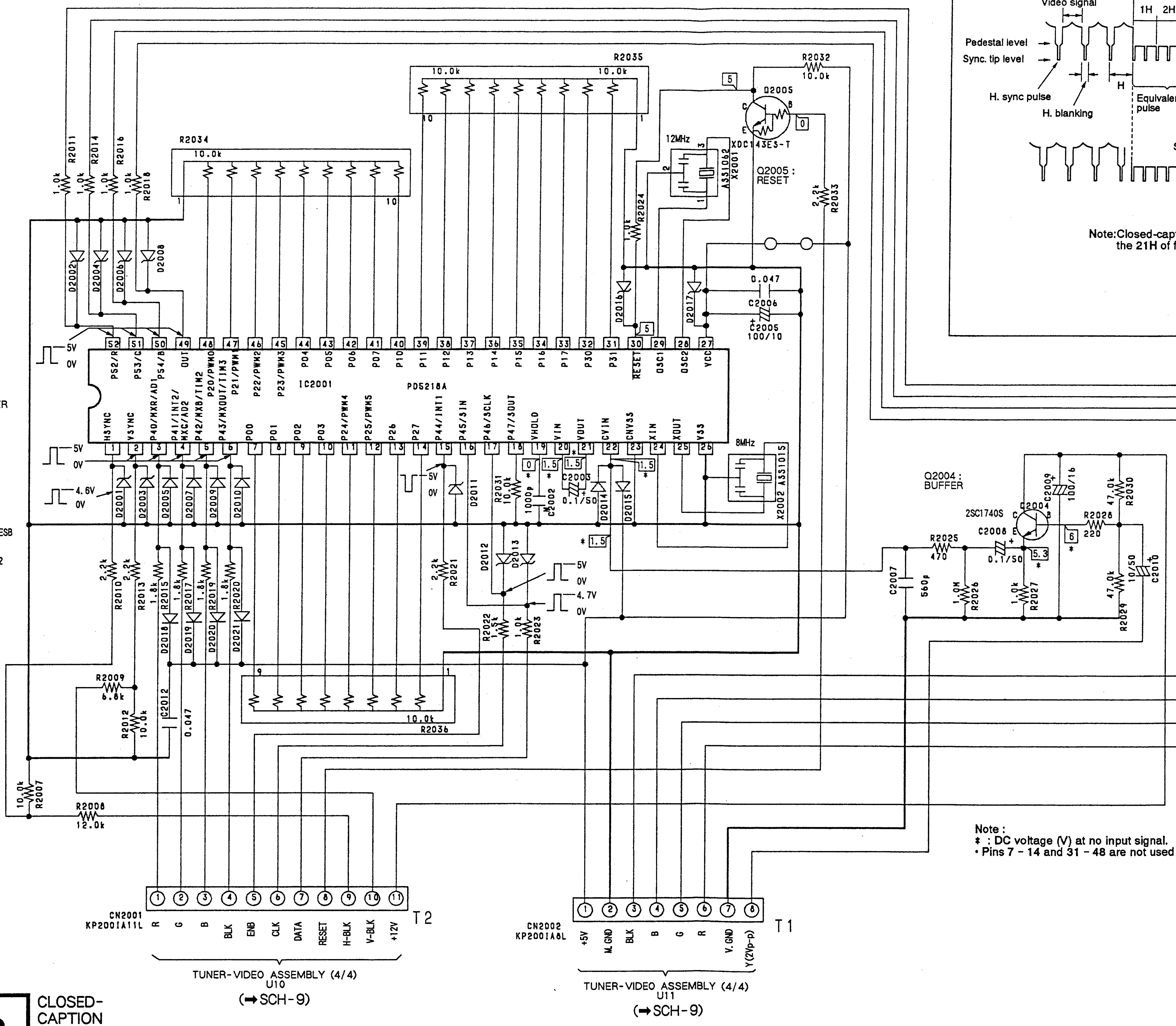
This P. C. B. connection diagram is viewed from the parts mounted side.

SCH-12

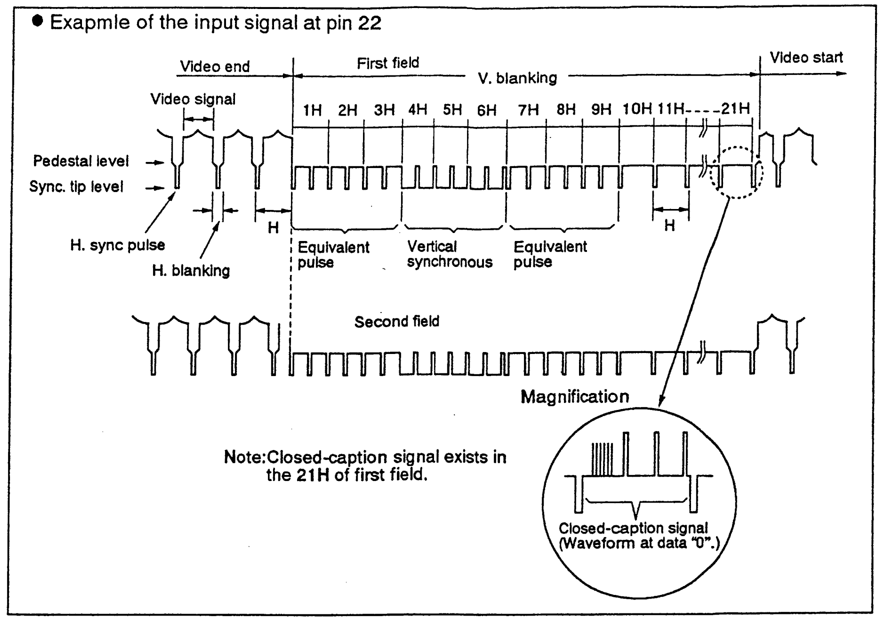
CLOSED-CAPTION ASSEMBLY (AWZ5069)

IC2001 :
CLOSED-CAPTION SIGNAL DETECTOR and CHARACTER DECODER

D2001-2004, 2006, 2008, D2011-2013, 2016, 2017	RD6.8ESB
D2005, 2007, 2009, 2010, D2014, 2015, 2018-2021	1SS252


R2035
10.0k
R2032
10.0k
Q2005
XDC143ES-T
12MHz
X2001
A3310G2
Q2005 :
RESET
R2033
2.2k
R2034
10.0k
R2011
R2014
R2016
R2018
1.0k
D2002
D2004
D2006
D2008
R2024
D2016
D2017
0.047
C2006
C2005
100/10
5V
0V
IC2001
PD5218A
P52/R
P53/G
P54/B
OUT
P20/PWM0
P21/PWM1
P22/PWM2
P23/PWM3
P04
P05
P06
P07
P10
P11
P12
P13
P14
P15
P16
P17
P30
P31
RESET
OSC1
OSC2
VCC
HSYNC
VSYNC
P40/HXR/AD1
P41/INT2/HXC/AD2
P42/HXB/TIM2
P43/HXOUT/TIM3
P00
P01
P02
P03
P24/PWM4
P25/PWM5
P26
P27
P44/INT1
P45/SIN
P46/SCLK
P47/SOUT
VHOLD
VIN
VOUT
CVIN
CNVSS
XIN
XOUT
VSS
8MHz
X2002
A3310IS
4.6V
D2001
D2003
D2005
D2007
D2009
D2010
D2011
R2031
10.0k
1000p
C2002
C2003
0.1/50
D2014
D2015
D2012
D2013
5V
0V
4.7V
1.5
0
R2010
2.2k
R2013
R2015
R2017
R2019
R2020
1.8k
D2018
D2019
D2020
D2021
R2021
2.2k
R2022
1.5k
R2023
1.0k
R2009
6.8k
R2012
10.0k
C2012
0.047
R2036
10.0k
R2007
10.0k
R2008
12.0k
Q2004 :
BUFFER
2SC1740S
Q2004
C2008
0.1/50
C2009
100/16
R2030
47.0k
R2028
220
R2025
470
C2007
560p
R2026
1.0M
R2027
1.0k
R2029
47.0k
C2010
10/50
5.3
6
CN2001
KP200IA11L
R
G
B
BLK
ENB
CLK
DATA
RESET
H-BLK
V-BLK
+12V
T2
TUNER-VIDEO ASSEMBLY (4/4)
U10
(➡SCH-9)
CN2002
KP200IA8L
+5V
M.GND
BLK
B
G
R
V.GND
Y(2Vp-p)
T1
TUNER-VIDEO ASSEMBLY (4/4)
U11
(➡SCH-9)

● Exapmle of the input signal at pin 22


Video end
First field
V. blanking
Video start
Video signal
1H 2H 3H 4H 5H 6H 7H 8H 9H 10H 11H----21H
Pedestal level
Sync. tip level
H
H
H. sync pulse
H. blanking
Equivalent pulse
Vertical synchronous
Equivalent pulse
Second field
Magnification
Closed-caption signal (Waveform at data "0".)

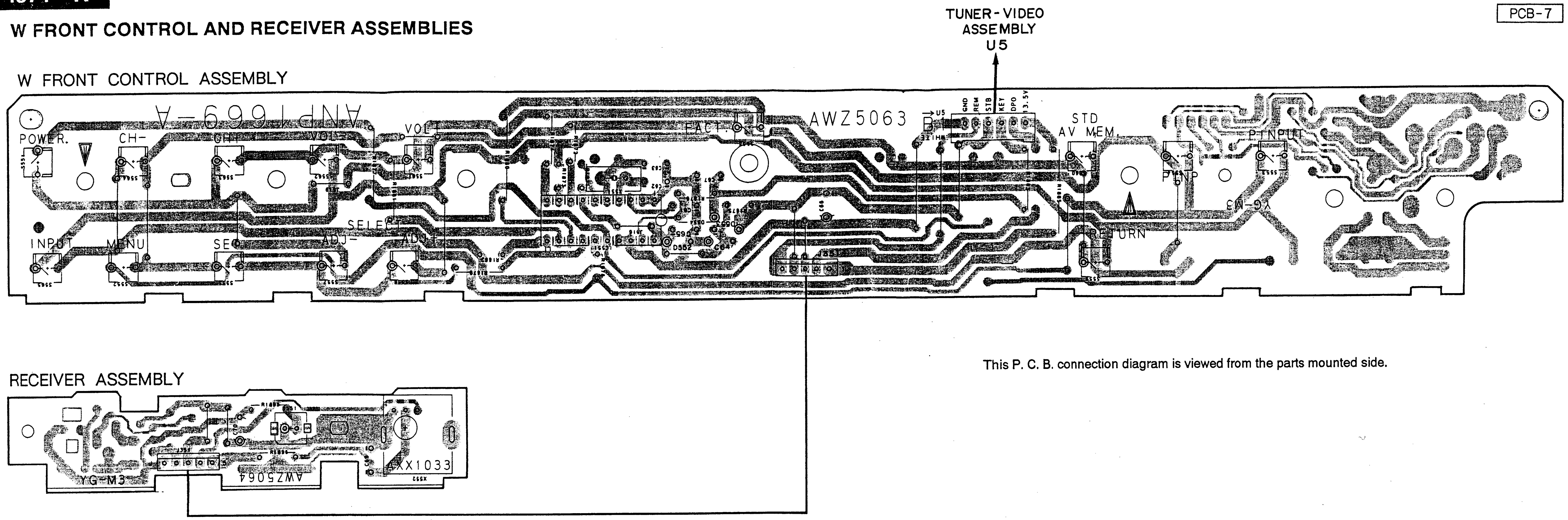
Note:Closed-caption signal exists in the 21H of first field.

Note :
* : DC voltage (V) at no input signal.
• Pins 7 - 14 and 31 - 48 are not used (0V).

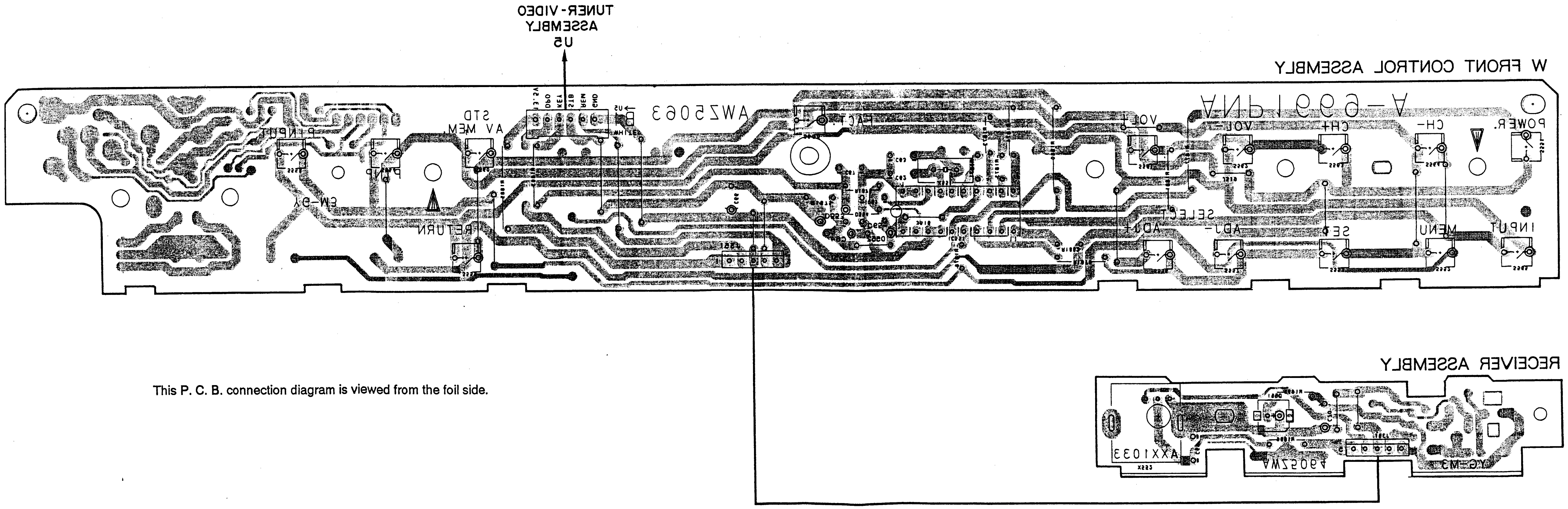
SCH-12 CLOSED-CAPTION ASSEMBLY

CLOSED-CAPTION ASSEMBLY **SCH-12**

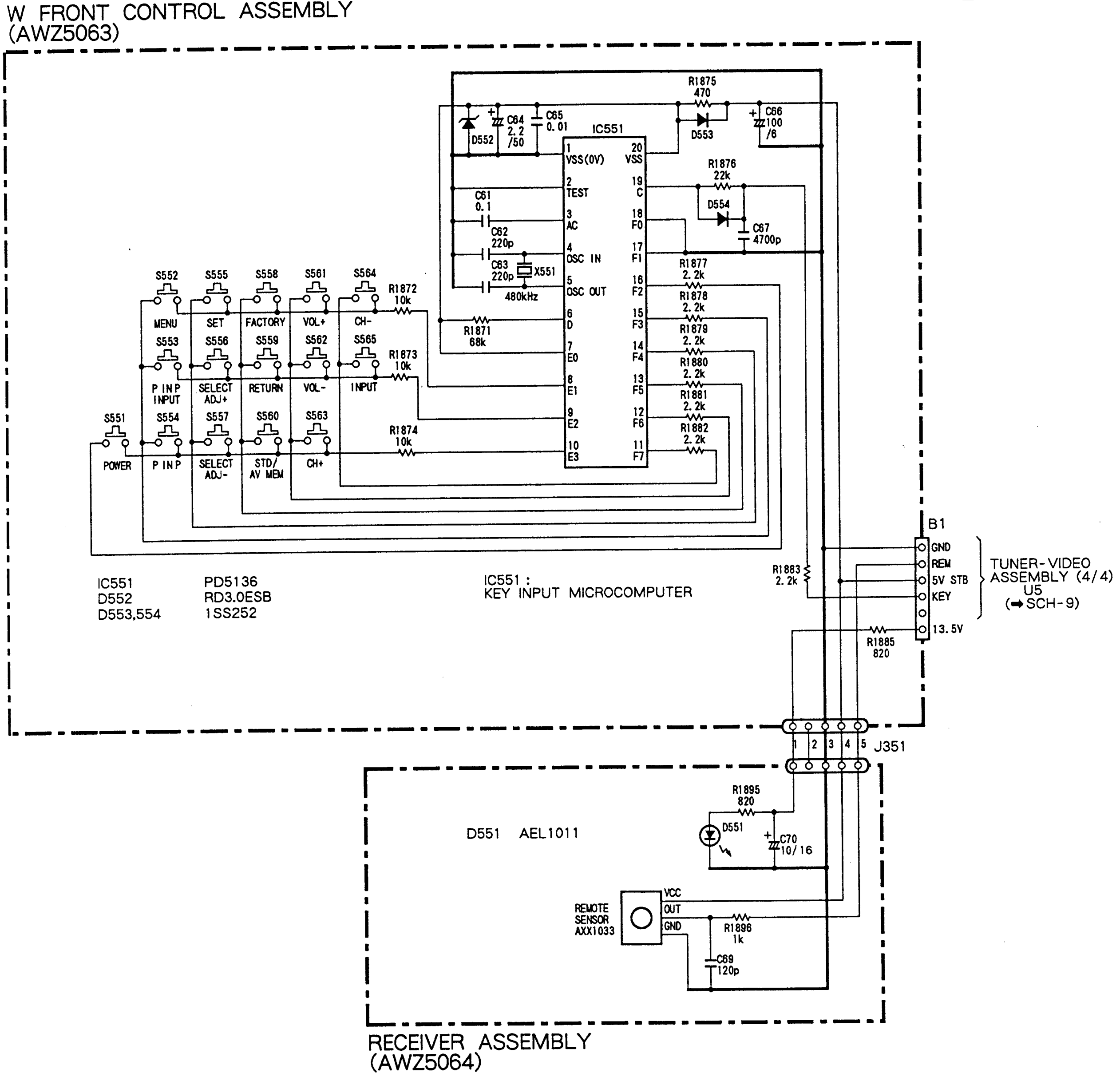
6.13 W FRONT CONTROL AND RECEIVER ASSEMBLIES


TUNER-VIDEO
ASSEMBLY
U5
W FRONT CONTROL ASSEMBLY
ANP1669-A
AWZ5063
POWER.
CH-
CH+
VOL
VOL+
FACT
GND
REM
STB
KEY
DPO
13.5V
STD
AV MEM.
P.INPUT
P.INP
YG-M3
INPUT
MENU
SEC
SELECT
ADJ-
ADJ+
RETURN
D552
RECEIVER ASSEMBLY
AWZ5064
AXX1033
YG-M3

This P. C. B. connection diagram is viewed from the parts mounted side.


TUNER-VIDEO
ASSEMBLY
U5
W FRONT CONTROL ASSEMBLY
ANP1669-A
AWZ5063
STD
AV MEM
P.INPUT
YG-M3
RETURN
FACT
VOL
VOL+
CH+
CH-
POWER.
SELECT
ADJ+
ADJ-
SEC
MENU
INPUT
RECEIVER ASSEMBLY
AXX1033
AWZ5064
YG-M3

This P. C. B. connection diagram is viewed from the foil side.


W FRONT CONTROL ASSEMBLY
(AWZ5063)
IC551
R1875
470
D552
C64
2.2
/50
C65
0.01
D553
C66
100
/6
1
VSS(0V)
20
VSS
2
TEST
19
C
R1876
22k
C61
0.1
3
AC
18
F0
D554
C67
4700p
C62
220p
4
OSC IN
17
F1
C63
220p
X551
480kHz
5
OSC OUT
16
F2
R1877
2.2k
6
D
15
F3
R1878
2.2k
R1871
68k
7
E0
14
F4
R1879
2.2k
8
E1
13
F5
R1880
2.2k
9
E2
12
F6
R1881
2.2k
10
E3
11
F7
R1882
2.2k
S552
MENU
S555
SET
S558
FACTORY
S561
VOL+
S564
CH-
R1872
10k
S553
P INP
INPUT
S556
SELECT
ADJ+
S559
RETURN
S562
VOL-
S565
INPUT
R1873
10k
S551
POWER
S554
P INP
S557
SELECT
ADJ-
S560
STD/
AV MEM
S563
CH+
R1874
10k
B1
GND
REM
5V STB
KEY
13.5V
R1883
2.2k
R1885
820
TUNER-VIDEO
ASSEMBLY (4/4)
U5
(➡SCH-9)
IC551 PD5136
D552 RD3.0ESB
D553,554 1SS252
IC551 :
KEY INPUT MICROCOMPUTER
J351
1
2
3
4
5
R1895
820
D551
C70
10/16
D551 AEL1011
REMOTE
SENSOR
AXX1033
VCC
OUT
GND
R1896
1k
C69
120p
RECEIVER ASSEMBLY
(AWZ5064)

W FRONT CONTROL
AND RECEIVER
ASSEMBLIES

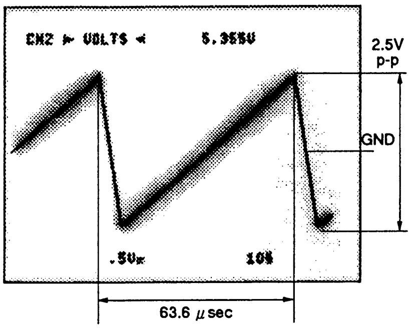
SCH-13

6.14 CONVERGENCE ASSEMBLY

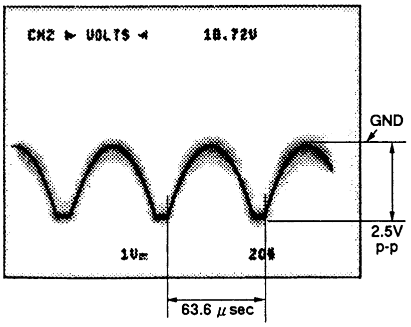
● Waveformes at CONVERGENCE assembly

- Input signal : Color bar
- Picuture quality : standard
- DC range (Unless otherwise noted.)

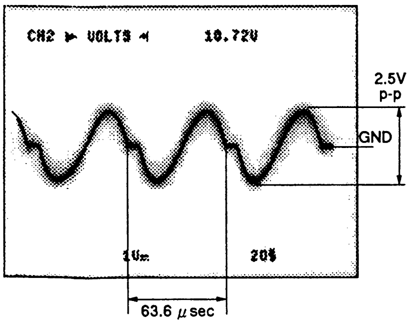
① **IC601 pin 4**
(H SAWTOOTH WAVE OUT)
V range : 0.5V/div.
H range : 10 μsec/div.



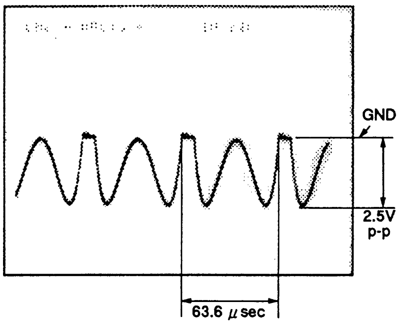
② **IC601 pin 5**
(H PARA. WAVE OUT)
V range : 1V/div.
H range : 20 μsec/div.



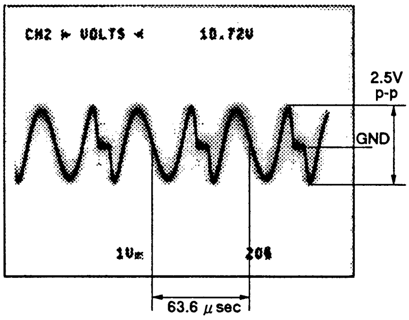
③ **IC601 pin 6**
(H 3rd-order WAVE OUT)
V range : 1V/div.
H range : 20 μsec/div.



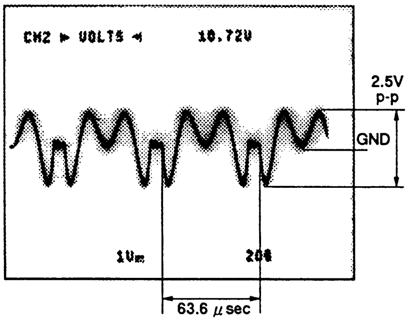
④ **IC601 pin 7**
(H 4th-order WAVE OUT)
V range : 1V/div.
H range : 20 μsec/div.



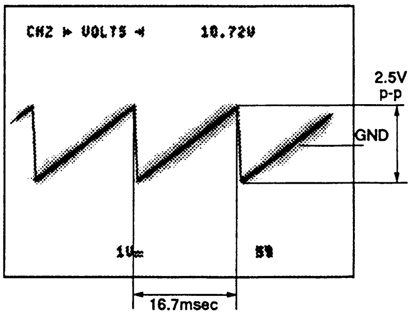
⑤ **IC601 pin 8**
(H 5th-order WAVE OUT)
V range : 1V/div.
H range : 20 μsec/div.



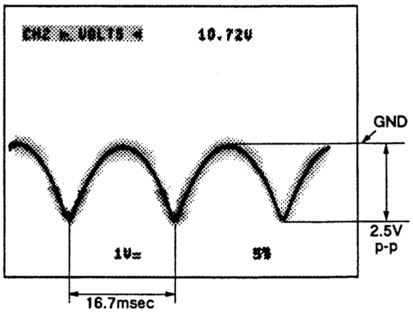
⑥ **IC601 pin 10**
(H 6th-order WAVE OUT)
V range : 1V/div.
H range : 20 μsec/div.



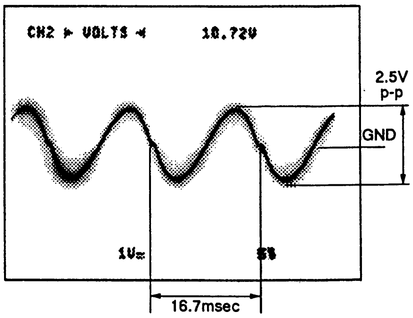
⑦ **IC602 pin 4**
(V SAWTOOTH WAVE OUT)
V range : 1V/div.
H range : 5msec/div.



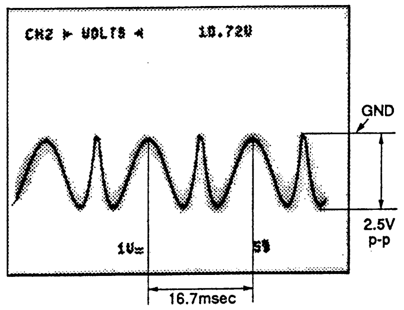
⑧ **IC602 pin 5**
(V PARA. WAVE OUT)
V range : 1V/div.
H range : 5msec/div.



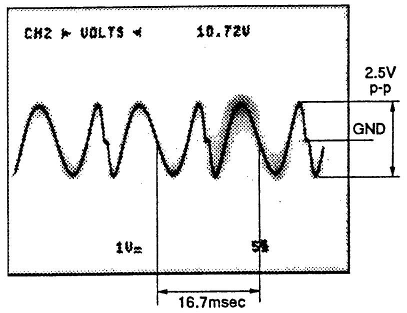
⑨ **IC602 pin 6**
(V 3rd-order wave OUT)
V range : 1V/div.
H range : 5msec/div.



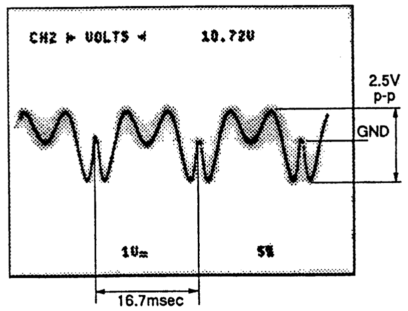
⑩ **IC602 pin 7**
(V 4-th order WAVE OUT)
V range : 1V/div.
H range : 5msec/div.



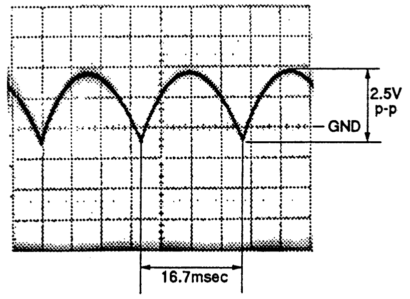
⑪ **IC602 pin 8**
(V 5-th order WAVE OUT)
V range : 1V/div.
H range : 5msec/div.



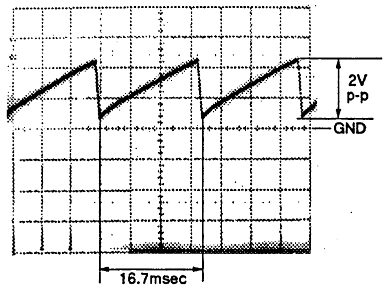
⑫ **IC602 pin 10**
(V 6-th order WAVE OUT)
V range : 1V/div.
H range : 5msec/div.



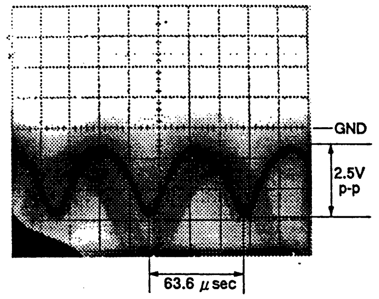
⑬ **G5 pin P. KEY**
V range : 1V/div.
H range : 5msec/div.



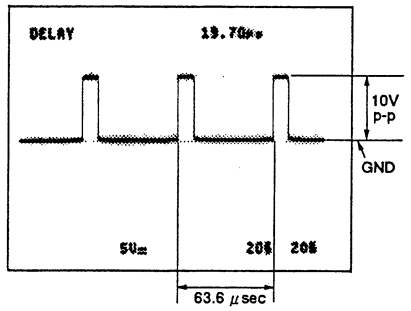
⑭ **G5 pin V. DRIVE**
V range : 1V/div.
H range : 5msec/div.



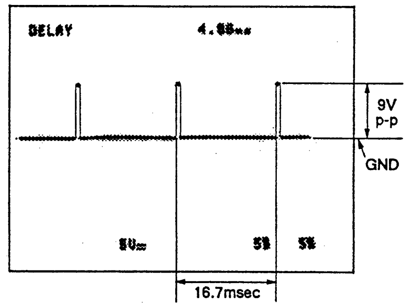
⑮ **G5 pin H. PARA**
V range :1V/div.
H range : 20 μsec/div.



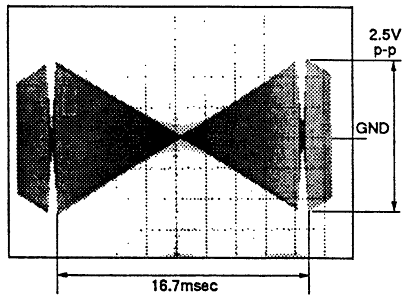
⑯ **G5 pin H. BLK**
V range : 5V/div.
H range : 20 μsec/div.



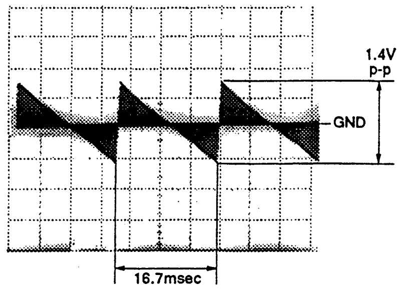
⑰ **G5 pin V. BLK**
V range : 5V/div.
H range : 5msec/div.



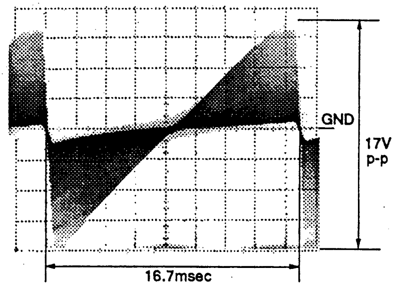
⑱ **IC603 pin 24 (GV–KEY)**
V range :0.5V/div.
H range : 2msec/div.



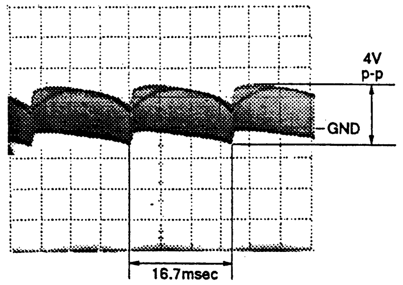
⑲ **IC604 pin 24 (GV-PIN)**
V range : 0.5V/div.
H range : 5msec/div.



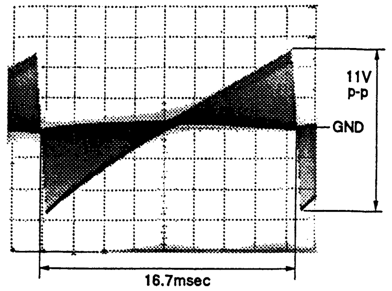
⑳ **IC606 pin 20 (BV OUT)**
V range : 2V/div.
H range : 2msec/div.



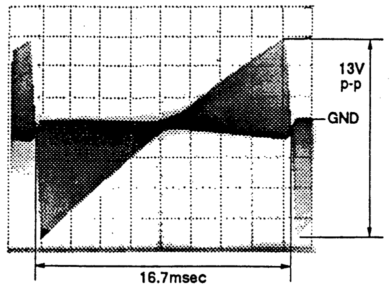
㉑ **IC606 pin 14 (BH OUT)**
V range : 2V/div.
H range : 5msec/div.



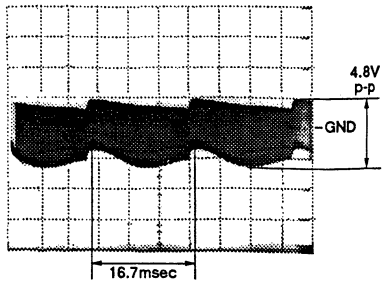
㉒ **IC606 pin 12 (GV OUT)**
V range : 2V/div.
H range : 2msec/div.

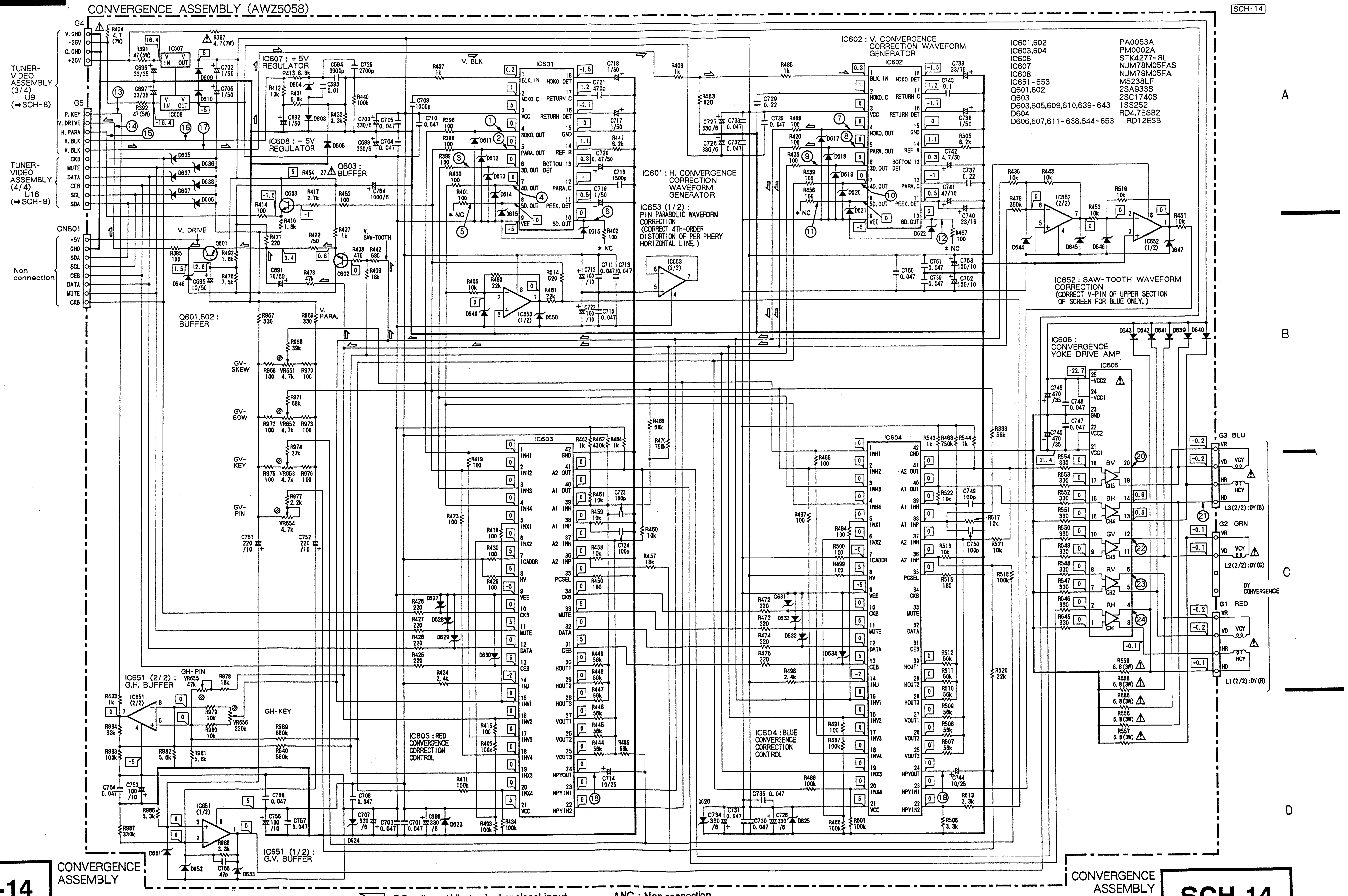


㉓ **IC606 pin 6 (RV OUT)**
V range : 2V/div.
H range : 2msec/div.



㉔ **IC606 pin 4 (RH OUT)**
V range : 2V/div.
H range : 5msec/div.




CONVERGENCE ASSEMBLY (AWZ5058)
SCH-14
G4
V.GND
-25V
C.GND
+25V
TUNER-VIDEO ASSEMBLY (3/4) U9 (➡SCH-8)
G5
P.KEY
V.DRIVE
H.PARA
H.BLK
V.BLK
CKB
MUTE
DATA
CEB
SCL
SDA
TUNER-VIDEO ASSEMBLY (4/4) U16 (➡SCH-9)
CN601
Non connection
IC607 : +5V REGULATOR
IC608 : -5V REGULATOR
Q603 : BUFFER
Q601,602 : BUFFER
V. DRIVE
V. SAW-TOOTH
V. PARA.
V. BLK
IC601
IC601 : H. CONVERGENCE WAVEFORM GENERATOR
IC653 (1/2) : PIN PARABOLIC WAVEFORM CORRECTION (CORRECT 4TH-ORDER DISTORTION OF PERIPHERY HORIZONTAL LINE.)
IC602 : V. CONVERGENCE CORRECTION WAVEFORM GENERATOR
IC602
IC601,602 PA0053A
IC603,604 PM0002A
IC606 STK4277-SL
IC607 NJM78M05FAS
IC608 NJM79M05FA
IC651-653 M5238LF
Q601,602 2SA933S
Q603 2SC1740S
D603,605,609,610,639-643 1SS252
D604 RD4.7ESB2
D606,607,611-638,644-653 RD12ESB
IC652 : SAW-TOOTH WAVEFORM CORRECTION (CORRECT V-PIN OF UPPER SECTION OF SCREEN FOR BLUE ONLY.)
IC606 : CONVERGENCE YOKE DRIVE AMP
IC606
GV-SKEW
GV-BOW
GV-KEY
GV-PIN
GH-PIN
GH-KEY
IC651 (2/2) : G.H. BUFFER
IC651 (1/2) : G.V. BUFFER
IC603
IC603 : RED CONVERGENCE CORRECTION CONTROL
IC604
IC604 : BLUE CONVERGENCE CORRECTION CONTROL
G3 BLU
L3 (2/2) : DY (B)
G2 GRN
L2 (2/2) : DY (G)
DY CONVERGENCE
G1 RED
L1 (2/2) : DY (R)
VCY
HCY
BV
BH
GV
RV
RH
CH1
CH2
CH3
CH4
CH5

CONVERGENCE ASSEMBLY

SCH-14

CONVERGENCE ASSEMBLY

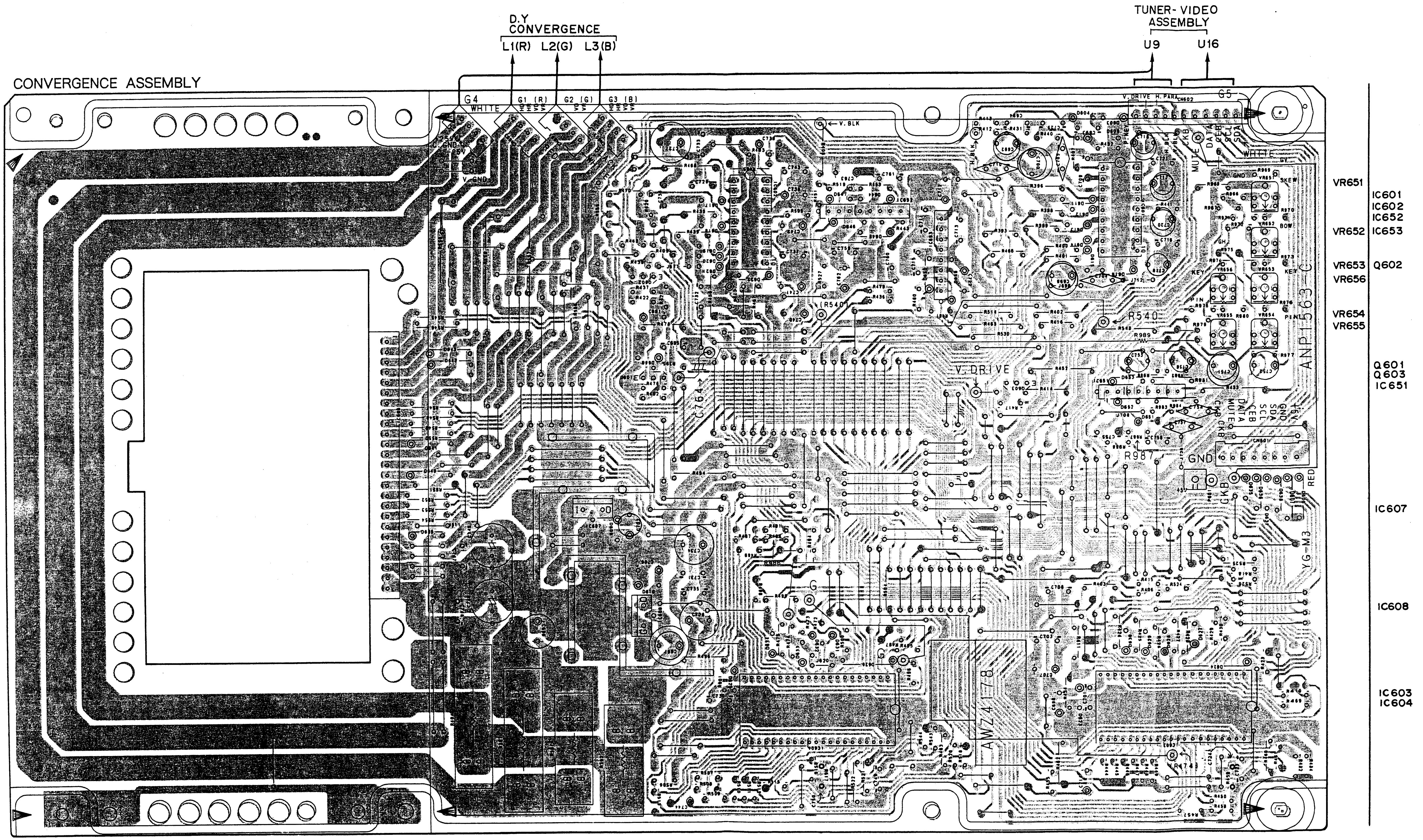
SCH-14

▭ : DC voltage (V) at color bar signal input.

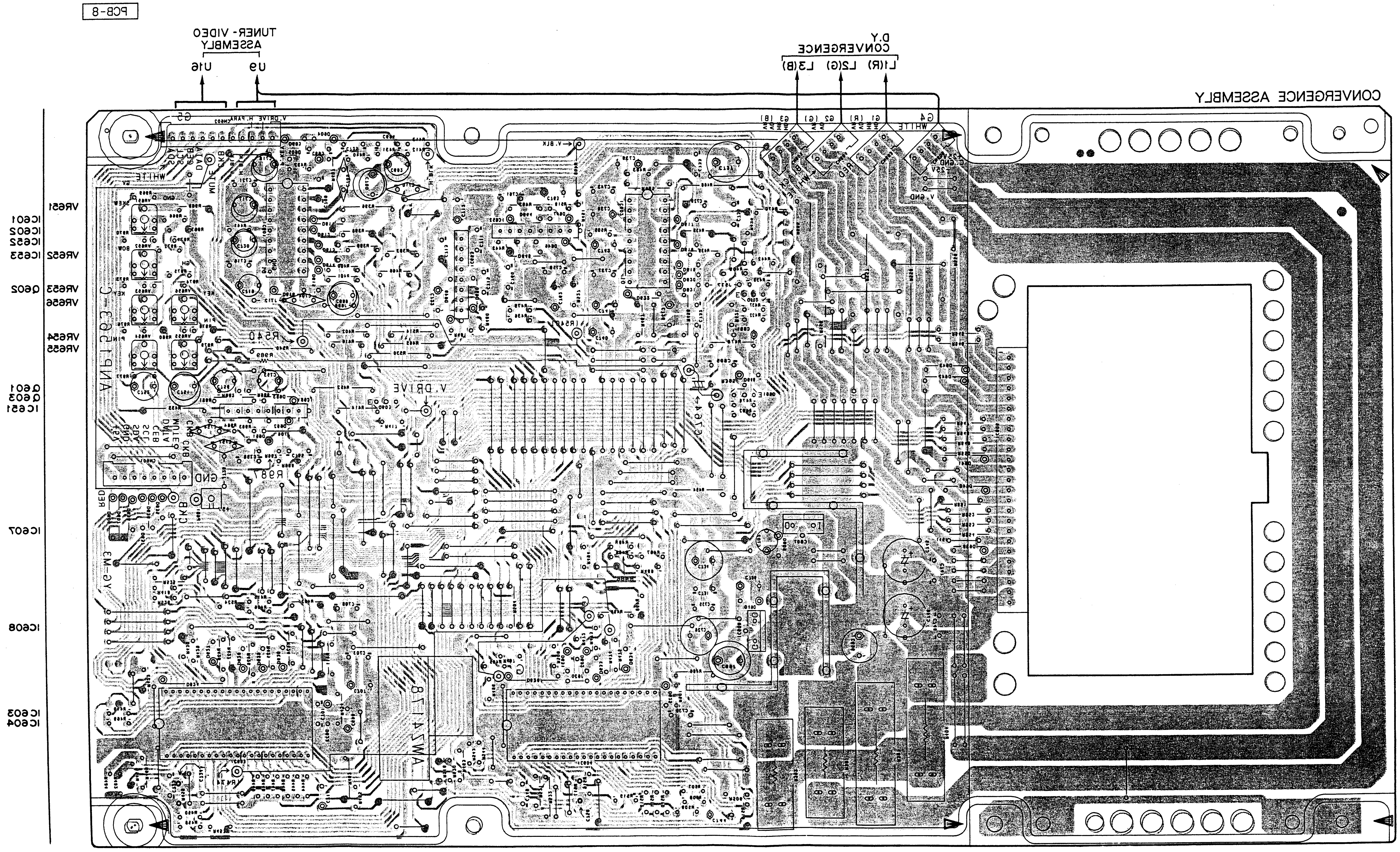
*NC : Non connection

▱ : V. Deflection Route

PCB-8


D.Y
CONVERGENCE
L1(R)
L2(G)
L3(B)
TUNER-VIDEO
ASSEMBLY
U9
U16
CONVERGENCE ASSEMBLY
G4
WHITE
G1 (R)
G2 (G)
G3 (B)
V.DRIVE
H.PARA
CN602
G5
V.BLK
MUTE
CKB
DATA
CEB
SCL
SDA
WHITE
GND
SKEW
BOW
KEY
PIN
R540
V.DRIVE
C764
ANP1563-C
DATA
MUTE
CEB
SCL
SDA
GND
+5V
R987
GND
CKB
RED
YG-M3
AWZ4178
VR651
VR652
VR653
VR656
VR654
VR655
IC601
IC602
IC652
IC653
Q602
Q601
Q603
IC651
IC607
IC608
IC603
IC604

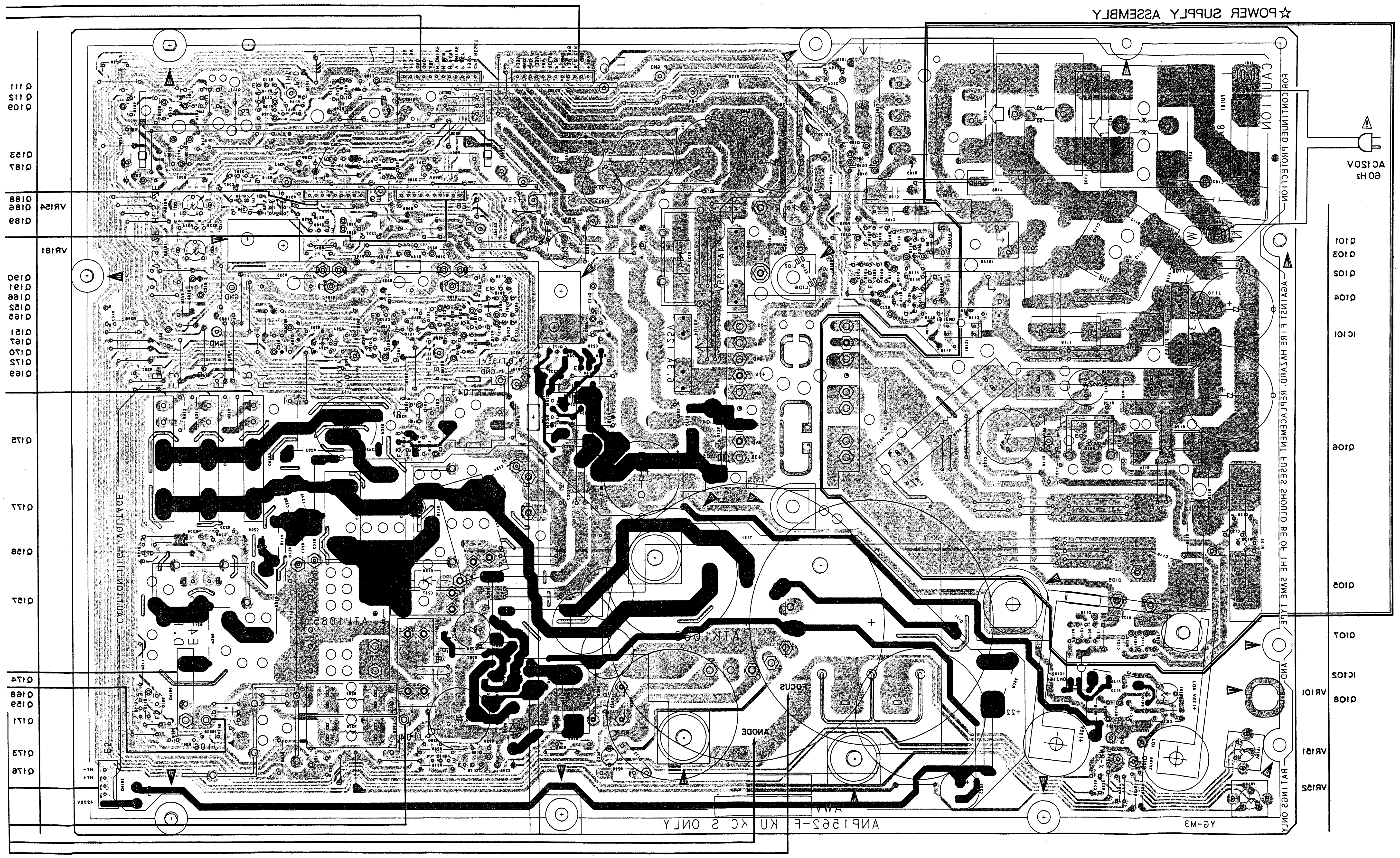
This P. C. B. connection diagram is viewed from the parts mounted side.

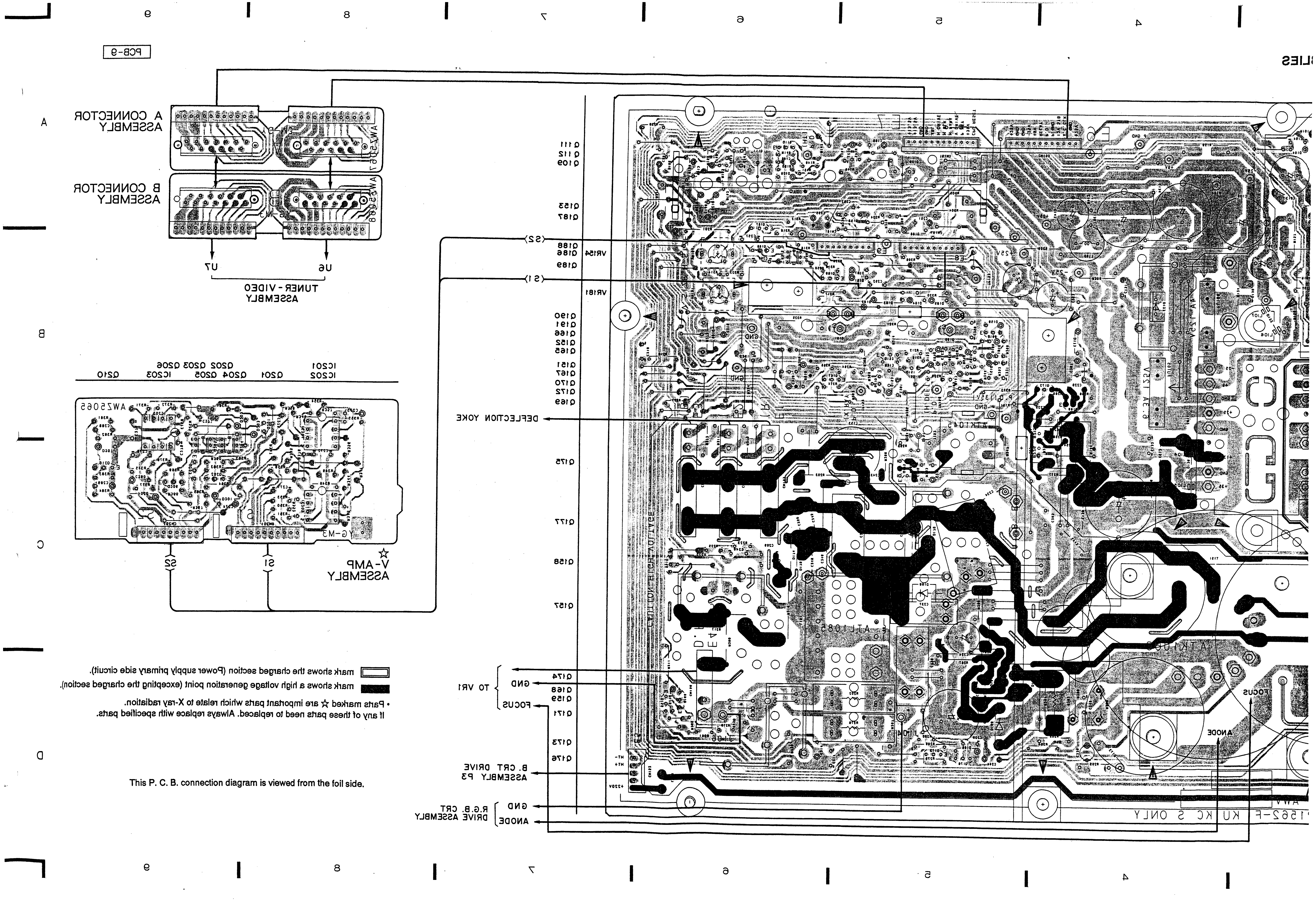

PCB-8
TUNER - VIDEO
ASSEMBLY
U9
U16
D.Y
CONVERGENCE
L1(R)
L2(G)
L3(B)
CONVERGENCE ASSEMBLY
G5
G4
WHITE
V.BLK
V.DRIVE
GND
RED
VR651
IC601
IC602
IC652
VR652
IC653
VR653
Q602
VR656
VR654
VR655
Q601
Q603
IC651
IC607
IC608
IC603
IC604

This P. C. B. connection diagram is viewed from the foil side.

6.15 POWER SUPPLY, V-AMP, A CONNECTOR AND B CONNECTOR ASSEMBLIES

☆POWER SUPPLY ASSEMBLY


6
5
4
3
2
1
A
B
C
D
AC120V
60Hz
CAUTION
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACEMENT FUSES SHOULD BE OF THE SAME TYPE AND RATINGS ONLY
CAUTION HIGH VOLTAGE
Q111
Q112
Q109
Q153
Q187
Q188
Q186
Q189
VR154
VR181
Q190
Q191
Q166
Q152
Q165
Q151
Q167
Q170
Q172
Q169
Q175
Q177
Q158
Q157
Q174
Q168
Q159
Q171
Q173
Q176
Q101
Q103
Q102
Q104
IC101
Q106
Q105
Q107
IC102
VR101
Q108
VR151
VR152
FOCUS
ANODE
GND
+220V
HT+
HT-
ATK1045
ATK1083
ATK1068
ANP1562-F KU KC S ONLY
AWV
YG-M3


9
8
7
6
5
4
A
B
C
D
A CONNECTOR ASSEMBLY
AWZ5067
B CONNECTOR ASSEMBLY
AWZ5068
U7
U6
TUNER-VIDEO ASSEMBLY
IC201 IC202
Q202 Q203 Q206
Q201 Q204 Q205 IC203 Q210
AWZ5065
YG-M3
☆ V-AMP ASSEMBLY
S1
S2
Q111
Q112
Q109
Q153
Q187
Q188
Q186
Q189
VR154
VR181
Q190
Q191
Q166
Q152
Q165
Q151
Q167
Q170
Q172
Q169
DEFLECTION YOKE
Q175
Q177
Q158
Q157
Q174
Q168
Q159
Q171
Q173
Q176
TO VR1
GND
FOCUS
B. CRT DRIVE ASSEMBLY P3
R.G.B. CRT DRIVE ASSEMBLY
GND
ANODE
FOCUS
ANODE
GND
1562-F KU KC S ONLY

▭ mark shows the charged section (Power supply primary side circuit).

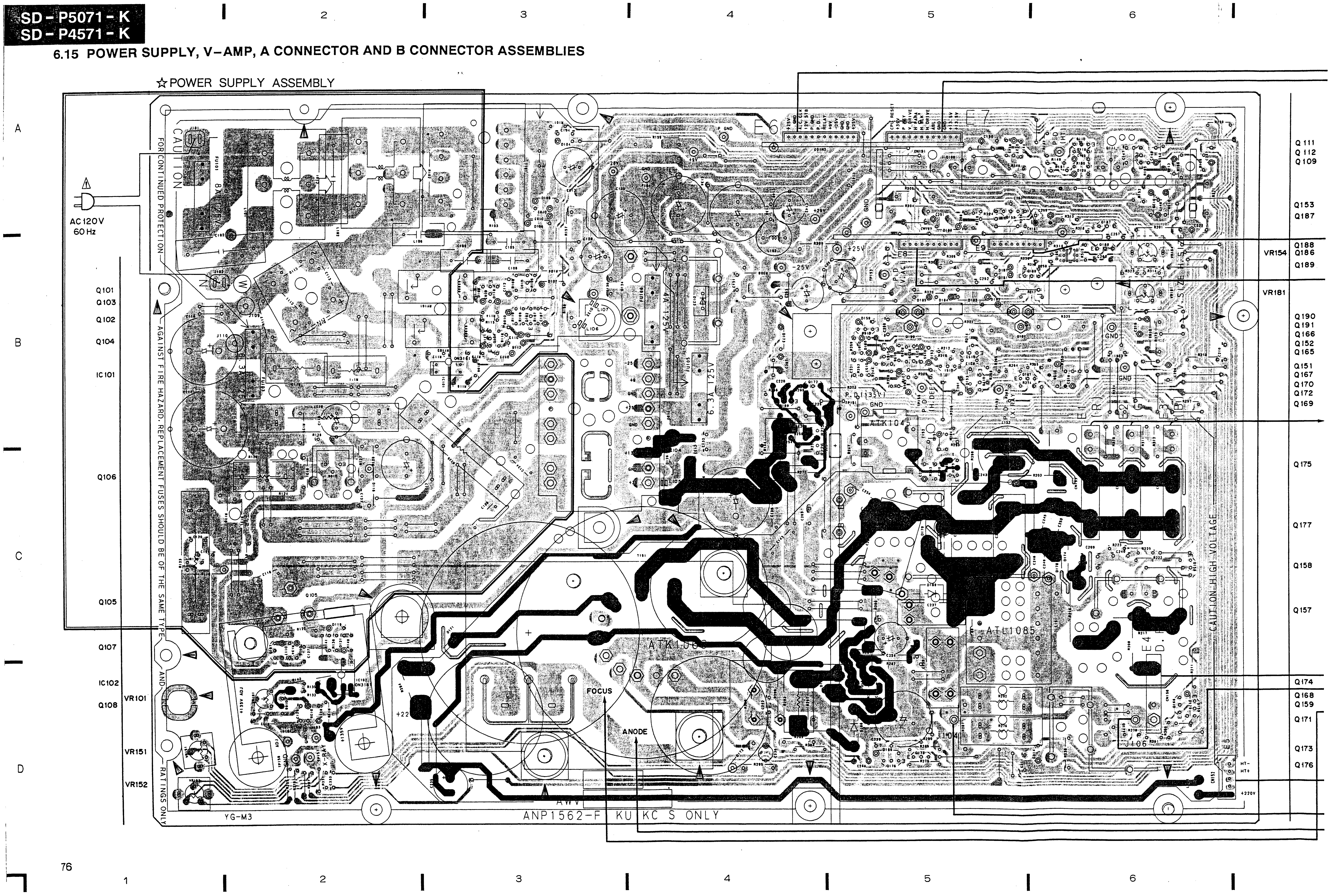
■ mark shows a high voltage generation point (excepting the charged section).

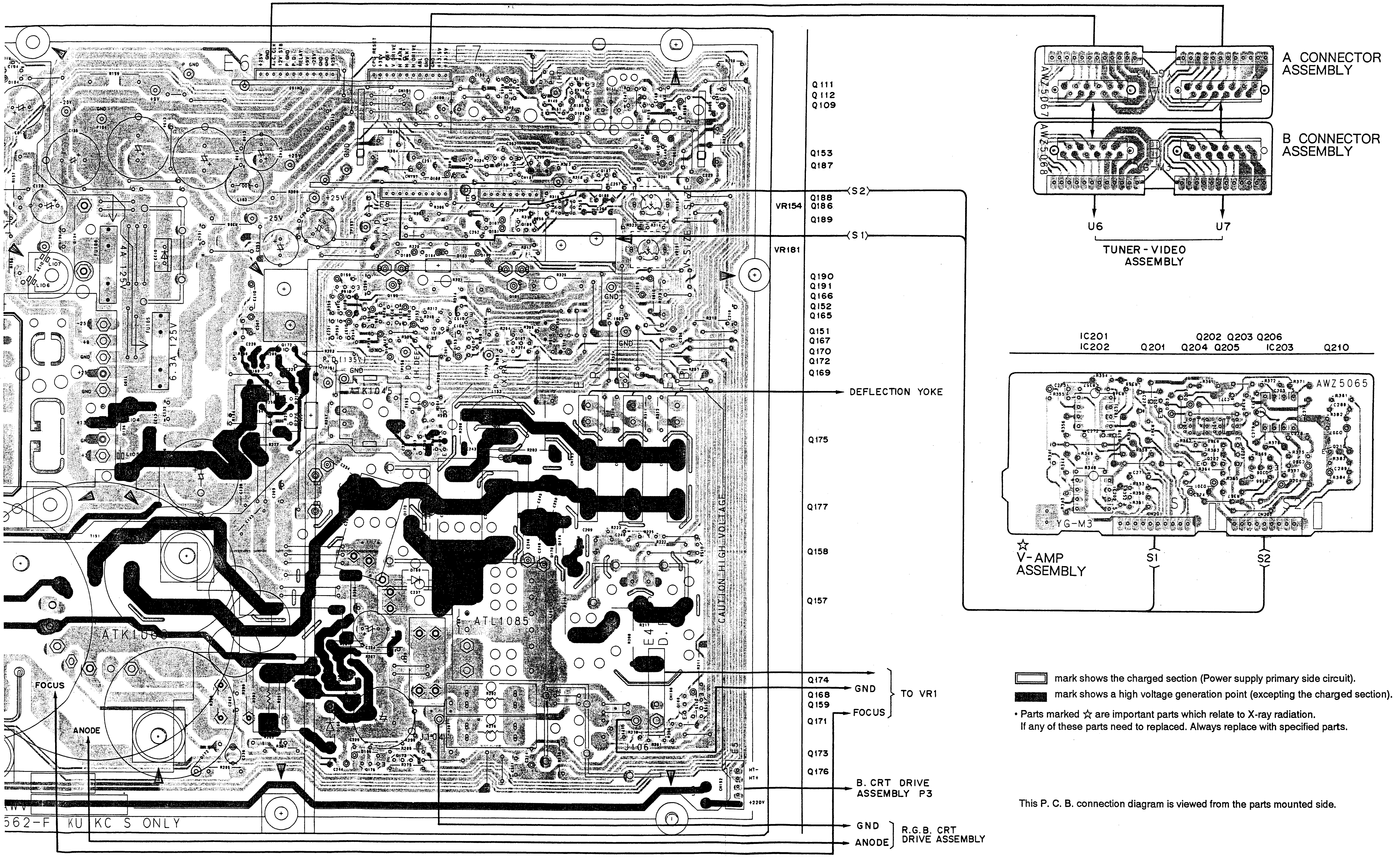
- Parts marked ☆ are important parts which relate to X-ray radiation. If any of these parts need to be replaced. Always replace with specified parts.

This P. C. B. connection diagram is viewed from the foil side.

6.15 POWER SUPPLY, V-AMP, A CONNECTOR AND B CONNECTOR ASSEMBLIES

☆POWER SUPPLY ASSEMBLY


1
2
3
4
5
6
A
B
C
D
AC120V
60 Hz
CAUTION
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD. REPLACEMENT FUSES SHOULD BE OF THE SAME TYPE AND RATINGS ONLY
8A 125V
4A 125V
6.3A 125V
E6
E7
E8
E9
P.D.(135V)
GND
ATK104
ATK1063
ATL1085
FOCUS
ANODE
+22
AWV
ANP1562-F KU KC S ONLY
YG-M3
CAUTION HIGH VOLTAGE
HT-
HT+
+220V
+25V
-25V
Q101
Q103
Q102
Q104
IC101
Q106
Q105
Q107
IC102
VR101
Q108
VR151
VR152
Q111
Q112
Q109
Q153
Q187
Q188
Q186
Q189
VR154
VR181
Q190
Q191
Q166
Q152
Q165
Q151
Q167
Q170
Q172
Q169
Q175
Q177
Q158
Q157
Q174
Q168
Q159
Q171
Q173
Q176


Q111
Q112
Q109
Q153
Q187
Q188
Q186
VR154
Q189
VR181
Q190
Q191
Q166
Q152
Q165
Q151
Q167
Q170
Q172
Q169
DEFLECTION YOKE
Q175
Q177
Q158
Q157
Q174
Q168
Q159
Q171
Q173
Q176
(S2)
(S1)
GND
FOCUS
TO VR1
B. CRT DRIVE ASSEMBLY P3
GND
ANODE
R.G.B. CRT DRIVE ASSEMBLY
FOCUS
ANODE
4A 125V
6.3A 125V
ATK1045
ATK1083
ATL1085
CAUTION HIGH VOLTAGE
E6
E7
E4
562-F KU KC S ONLY
A CONNECTOR ASSEMBLY
AWZ5067
B CONNECTOR ASSEMBLY
AWZ5068
U6
U7
TUNER - VIDEO ASSEMBLY
IC201
IC202
Q201
Q202 Q203 Q206
Q204 Q205
IC203
Q210
AWZ5065
YG-M3
☆ V-AMP ASSEMBLY
S1
S2

□ mark shows the charged section (Power supply primary side circuit).

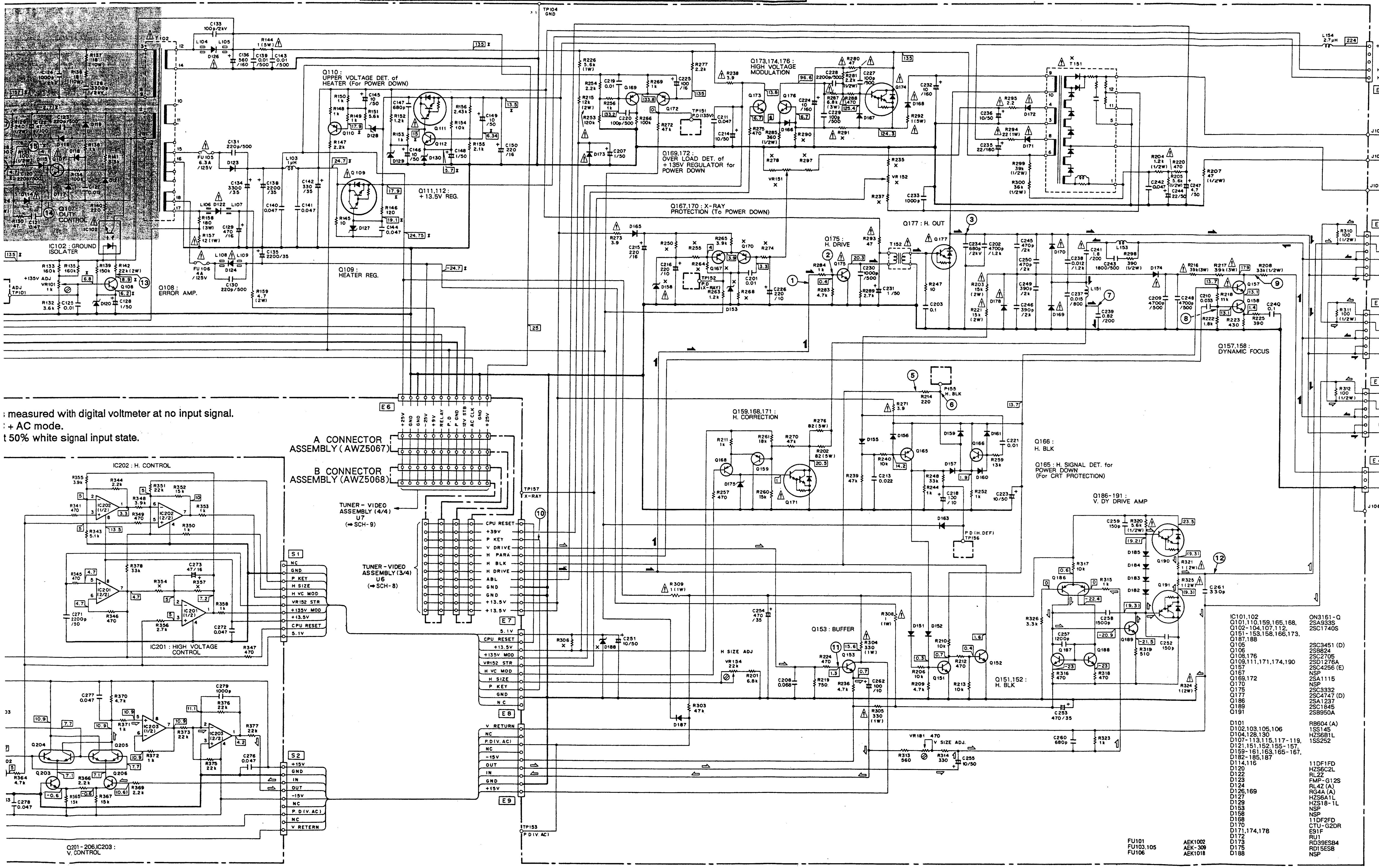
■ mark shows a high voltage generation point (excepting the charged section).

- Parts marked ☆ are important parts which relate to X-ray radiation. If any of these parts need to replaced. Always replace with specified parts.

This P. C. B. connection diagram is viewed from the parts mounted side.

For POWER SUPPLY assembly, AWZ1356 is used, but for servicing, AWZ1360 is supplied. AWZ1360 is the same as AWZ1356 of which X-ray protection and high voltage sections have been adjusted and these adjusted parts are covered with the shield cases. Therefore, AWZ1360 need not be adjusted.

➡ : H. Deflection Route
⇨ : V. Deflection Route


SCH-15
T102
Q110 : UPPER VOLTAGE DET. of HEATER (For POWER DOWN)
Q111,112 : +13.5V REG.
Q109 : HEATER REG.
Q108 : ERROR AMP.
IC102 : GROUND ISOLATER
Q107 DUTY CONTROL
Q169,172 : OVER LOAD DET. of +135V REGULATOR for POWER DOWN
Q173,174,176 : HIGH VOLTAGE MODULATION
Q167,170 : X-RAY PROTECTION (To POWER DOWN)
Q175 : H. DRIVE
Q177 : H. OUT
T151
T152
Q157,158 : DYNAMIC FOCUS
Q159,168,171 : H. CORRECTION
Q166 : H. BLK
Q165 : H. SIGNAL DET. for POWER DOWN (For CRT PROTECTION)
Q186-191 : V. DY DRIVE AMP
Q153 : BUFFER
Q151,152 : H. BLK
H SIZE ADJ
V SIZE ADJ.
B CRT DRIVE ASSEMBLY P3 (➡SCH-10)
CRT ASSEMBLY R,G,B (➡SCH-10)
VR1 FOCUS VARIABLE RESISTOR (➡SCH-1)
DEFLECTION YOKE
L1 (1/2) (R)
L2 (1/2) (G)
L3 (1/2) (B)
ANODE
FOCUS
GND
+220V
HT+
HT−
V DY
H DY
A CONNECTOR ASSEMBLY (AWZ5067)
B CONNECTOR ASSEMBLY (AWZ5068)
TUNER-VIDEO ASSEMBLY (4/4) U7 (➡SCH-9)
TUNER-VIDEO ASSEMBLY (3/4) U6 (➡SCH-8)
IC202 : H. CONTROL
IC201 : HIGH VOLTAGE CONTROL
Q201-206,IC203 : V. CONTROL
E1 E2 E3 E4 E5 E6 E7 E8 E9 S1 S2
CPU RESET
+39V
P KEY
V DRIVE
H PARA
H BLK
H DRIVE
ABL
+13.5V
+135V MOD
VR152 STR
H VC MOD
H SIZE
V RETURN
P.DIV.AC)
TP157 X-RAY
TP153 P.DIV.AC)
TP104 GND
TP152 P.D (X-RAY)
TP151 P.D (135V)
TP156 P.D (H.DEF)
P155 H. BLK

: measured with digital voltmeter at no input signal.
: + AC mode.
t 50% white signal input state.

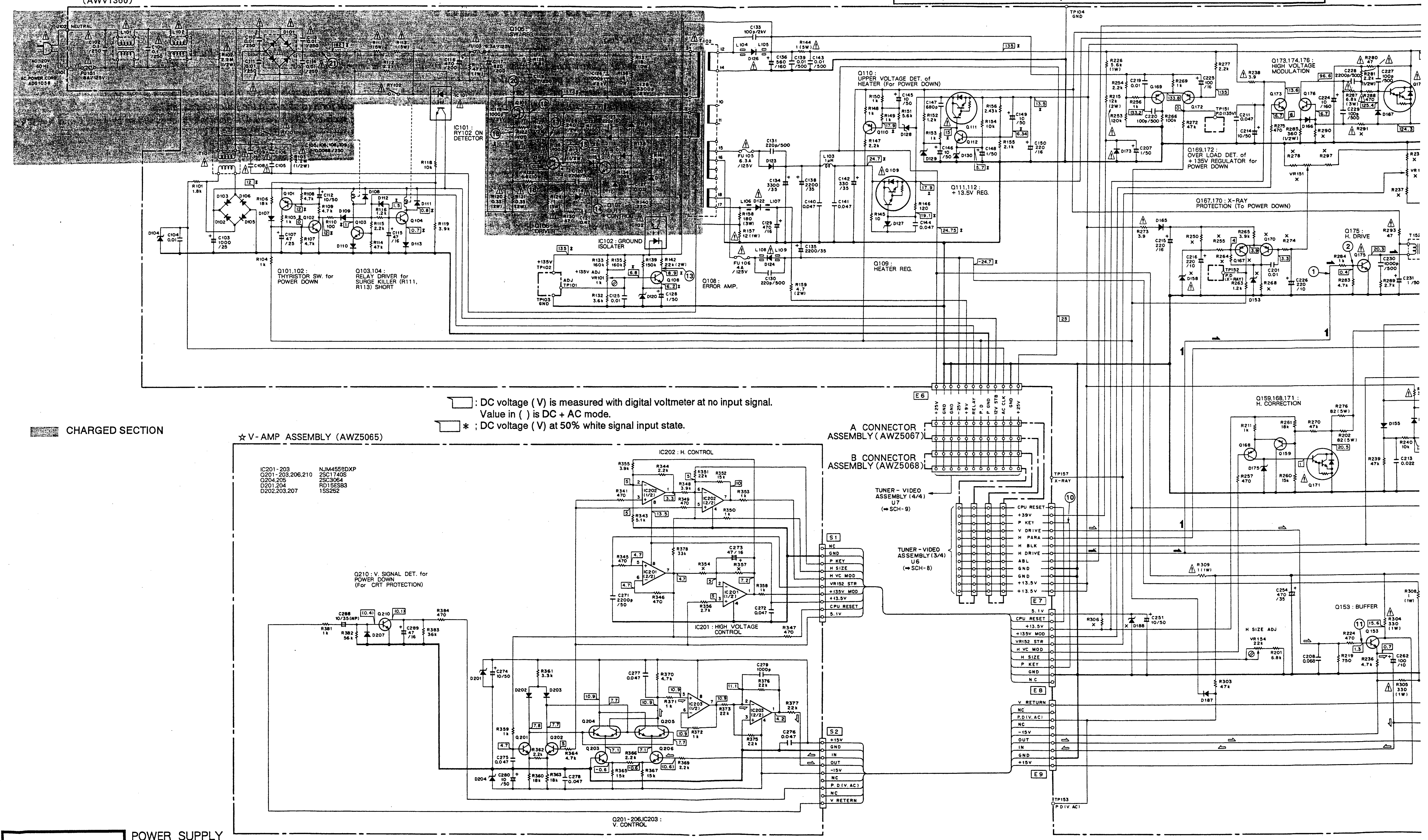
FU101	AEK1002
FU103,105	AEK-309
FU106	AEK1018

IC101,102	ON3161-Q
Q101,110,159,165,168,	2SA933S
Q102-104,107,112,	2SC1740S
Q151-153,158,166,173,	
Q187,188	
Q105	2SC3451 (D)
Q106	2SB824
Q108,176	2SC2705
Q109,111,171,174,190	2SD1276A
Q157	2SC4256 (E)
Q167	NSP
Q169,172	2SA1115
Q170	NSP
Q175	2SC3332
Q177	2SC4747 (D)
Q186	2SA1237
Q189	2SC1845
Q191	2SB950A
D101	RB604 (A)
D102,103,105,106	1SS145
D104,128,130	HZS6B1L
D107-113,115,117-119,	1SS252
D121,151,152,155-157,	
D159-161,163,165-167,	
D182-185,187	
D114,116	11DF1FD
D120	HZS6C2L
D122	RL2Z
D123	FMP-G12S
D124	RL4Z (A)
D126,169	RG4A (A)
D127	HZS6A1L
D129	HZS18-1L
D153	NSP
D158	NSP
D168	11DF2FD
D170	CTU-G2DR
D171,174,178	E91F
D172	RU1
D173	RD39ESB4
D175	RD15ESB
D188	NSP

POWER SUPPLY
AND V-AMP
ASSEMBLIES

SCH-15

For POWER SUPPLY assembly, AWZ1356 is used, but for servicing, AWZ1360 is supplied. AWZ1360 is the same as AWZ1356 of which X-ray protection and high voltage sections have been adjusted and these adjusted parts are covered with the shield cases. Therefore, AWZ1360 need not be adjusted.


☆POWER SUPPLY ASSEMBLY (AWV1360)
AC POWER CORD ADG1038
IC101 : RY102 ON DETECTOR
Q105 : SW REG.
Q101,102 : THYRISTOR SW. for POWER DOWN
Q103,104 : RELAY DRIVER for SURGE KILLER (R111, R113) SHORT
IC102 : GROUND ISOLATER
Q108 : ERROR AMP.
Q110 : UPPER VOLTAGE DET. of HEATER (For POWER DOWN)
Q109 : HEATER REG.
Q111,112 : +13.5V REG.
Q173,174,176 : HIGH VOLTAGE MODULATION
Q169,172 : OVER LOAD DET. of +135V REGULATOR for POWER DOWN
Q167,170 : X-RAY PROTECTION (To POWER DOWN)
Q175 : H. DRIVE
Q159,168,171 : H. CORRECTION
Q153 : BUFFER
H SIZE ADJ
TP104 GND
TP102 +135V
TP103 GND
TP157 X-RAY
TP153 P.D(V.AC)
E6
A CONNECTOR ASSEMBLY (AWZ5067)
B CONNECTOR ASSEMBLY (AWZ5068)
TUNER-VIDEO ASSEMBLY (4/4) U7 (→SCH-9)
TUNER-VIDEO ASSEMBLY (3/4) U6 (→SCH-8)
CPU RESET
+39V
P KEY
V DRIVE
H PARA
H BLK
H DRIVE
ABL
GND
+13.5V
E7
E8
E9
☆V-AMP ASSEMBLY (AWZ5065)
IC201-203 NJM4558DXP
Q201-203,206,210 2SC1740S
Q204,205 2SC3064
D201,204 RD15ESB3
D202,203,207 1SS252
IC202 : H. CONTROL
IC201 : HIGH VOLTAGE CONTROL
Q210 : V. SIGNAL DET. for POWER DOWN (For CRT PROTECTION)
Q201-206,IC203 : V. CONTROL
S1
S2
NC
GND
P KEY
H SIZE
H VC MOD
VR152 STR
+135V MOD
+13.5V
CPU RESET
5.1V
+15V
IN
OUT
-15V
P.D(V.AC)
V RETURN

▭ : DC voltage (V) is measured with digital voltmeter at no input signal.
Value in ( ) is DC + AC mode.

▭ ∗ ; DC voltage (V) at 50% white signal input state.

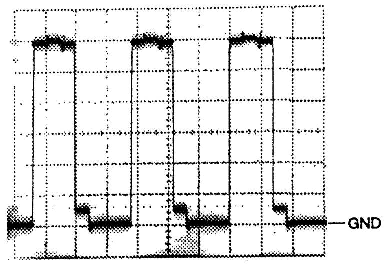
▨ CHARGED SECTION

SCH-15 POWER SUPPLY AND V-AMP ASSEMBLIES

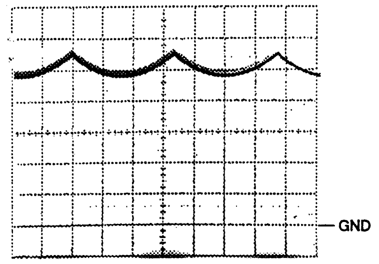
● Waveformes at Power Supply Assembly (Deflection circuit)

- Input signal : Color bar
- Picture quality : standard
- Screen size : standard
- Others : standard

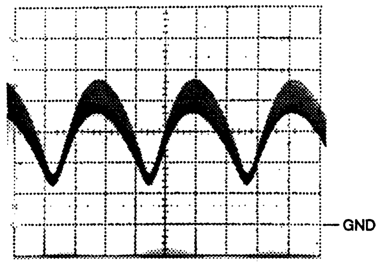
① **E7 pin H. DRIVE**
V range : 0.5V/div.
H range : 20 μsec/div.



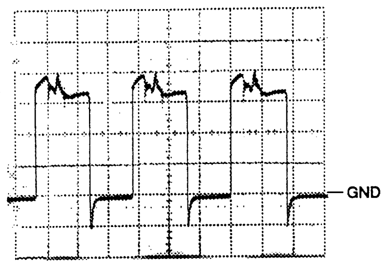
④ **Q168 Base**
V range : 2V/div.
H range : 5msec/div.



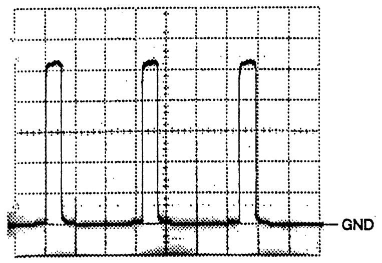
⑦-2 **Between C239 and L151 (H RATE)**
V range : 10V/div.
H range : 20 μsec/div.



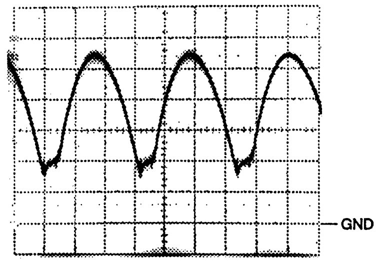
② **Q175 Base**
V range : 0.2V/div.
H range : 20 μsec/div.



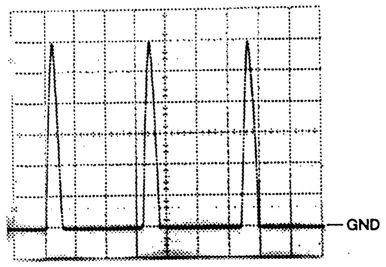
⑤ **Q152 Collector**
V range : 2V/div.
H range : 20 μsec/div.



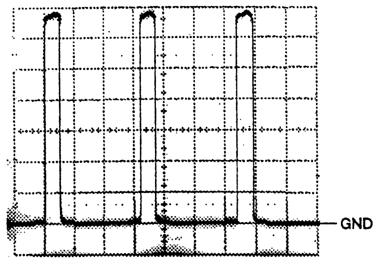
⑧ **Q158 Base**
V range : 0.5V/div.
H range : 20 μsec/div.



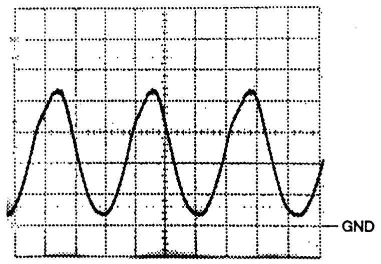
③-1 **Q177 Collector (H. RATE)**
V range : 200V/div.
H range : 20 μsec/div.



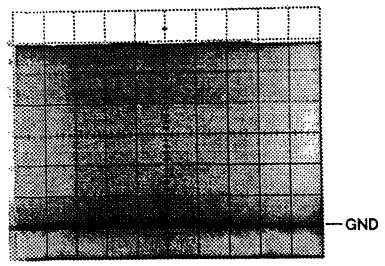
⑥ **P155 (TP–H. BLK)**
V range : 2V/div.
H range : 20 μsec/div.



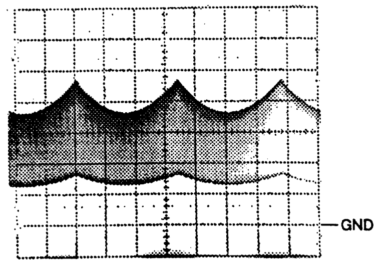
⑨ **Q157 Collector**
V range : 100V/div.
H range : 20 μsec/div.



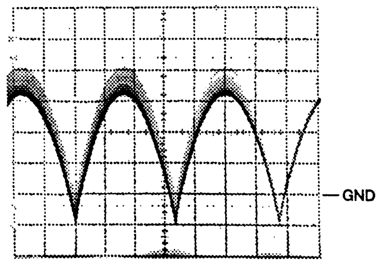
③-2 **Q177 Collector (V. RATE)**
V range : 200V/div.
H range : 5msec/div.



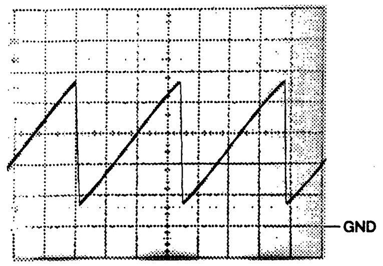
⑦-1 **Between C239 and L151 (V RATE)**
V range : 10V/div.
H range : 5msec/div.



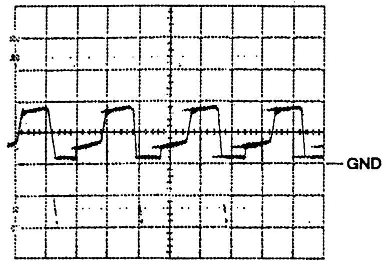
⑩ **E7 pin P KEY**
V range : 0.5V/div.
H range : 5msec/div.



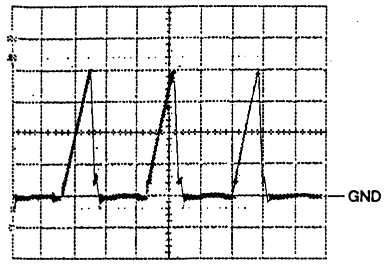
⑪ **Q153 Base**
V range : 0.5V/div.
H range : 5msec/div.



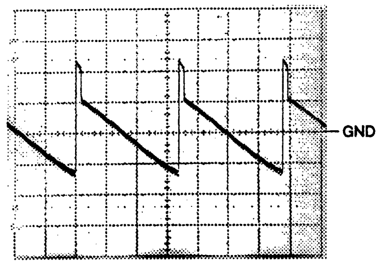
⑭ **Q107 Collector**
V range : 5V/div.
H range : 10 μsec/div.



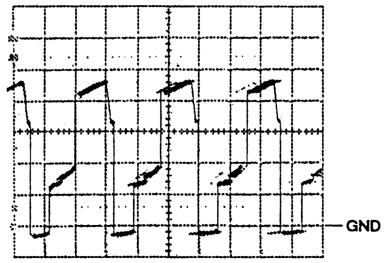
⑱ **Q105 Emitter**
V range : 0.2V/div.
H range : 10 μsec/div.



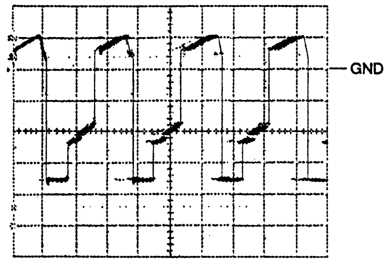
⑫ **Between R321 and R325**
V range : 10V/div.
H range : 5msec/div.



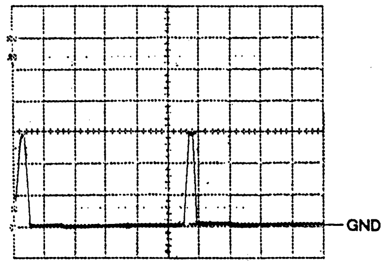
⑮ **Q106 Base**
V range : 2V/div.
H range : 10 μsec/div.



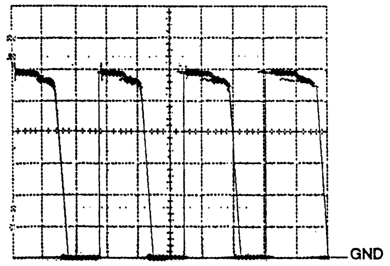
⑲ **Q105 Base**
V range : 2V/div.
H range : 10 μsec/div.



⑯ **Q106 Collector**
V range : 2V/div.
H range : 5 μsec/div.



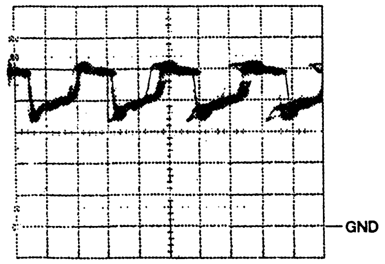
⑳ **Q105 Collector**
V range : 50V/div.
H range : 10 μsec/div.



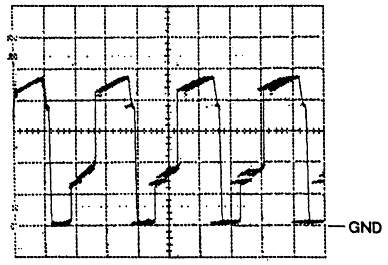
● Waveformes at Power Supply Assembly (Power Supply circuit)

- Input signal : White 50%
- Picture quality : standard
- Range : DC range (without notice)

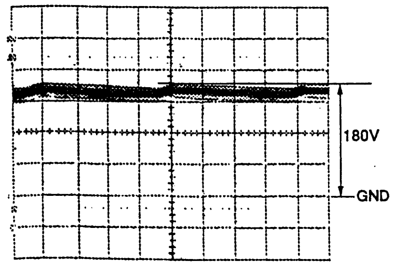
⑬ **Q108 Collector**
V range : 20V/div.
H range : 10 μsec/div.



⑰ **Q106 Emitter**
V range : 2V/div.
H range : 10 μsec/div.



㉑ **D101 Catode**
V range : 50V/div.
H range : 2 μsec/div.



7. PCB

NOTES:
- *Parts marked b*
- *The ⚠ mark fou*
be sure to use p
- *Parts marked b*
- *When ordering*
Ex.1 When ther
560 Ω →
47k Ω →
0.5 Ω →
1 Ω →
Ex.2 When the
5.62k Ω
- *Parts marked b*
If any of these p
- *Parts marked b*
circuit board as
If any part mar

Mark No.

LIST OF AS

TUNER-VI
☆ POWER SU
NSP AV I/O A
AUDIO
P INP
REC MU
AV I/O
NSP CONVERGE
CONVER
R. CRT
G. CRT
B. CRT
NSP FRONT CO
W FRON
RECEIV
☆ V-AMP
MICROC
A CONN
B CONN
CLOSED

TUNER-VI

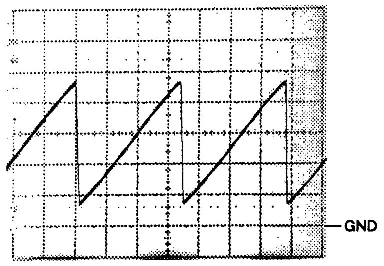
SEMICONDU

IC352
IC302
IC303
IC453
IC351

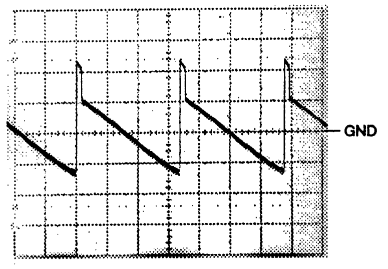
IC253
IC451
IC254
IC452

- **Waveformes at Power Supply Assembly (Power Supply circuit)**
- Input signal : White 50%
- Picture quality : standard
- Range : DC range (without notice)

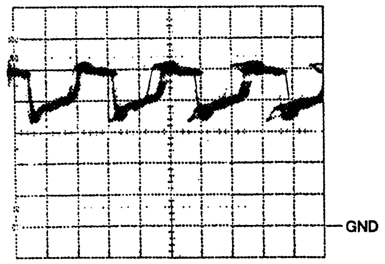
⑪ **Q153 Base**
V range : 0.5V/div.
H range : 5msec/div.



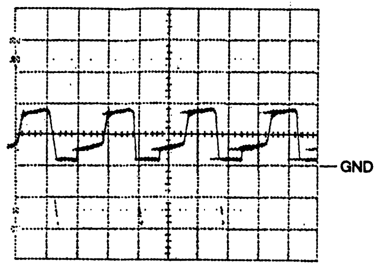
⑫ **Between R321 and R325**
V range : 10V/div.
H range : 5msec/div.



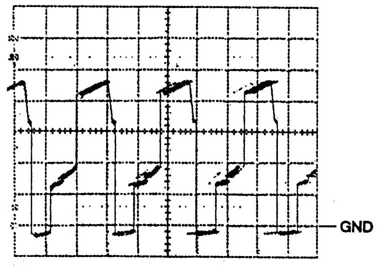
⑬ **Q108 Collector**
V range : 20V/div.
H range : 10 μsec/div.



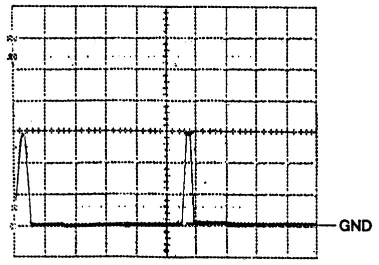
⑭ **Q107 Collector**
V range : 5V/div.
H range : 10 μsec/div.



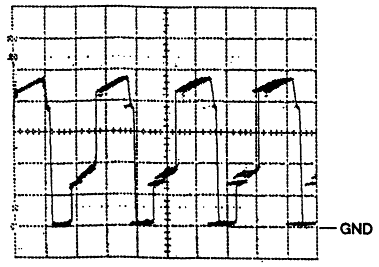
⑮ **Q106 Base**
V range : 2V/div.
H range : 10 μsec/div.



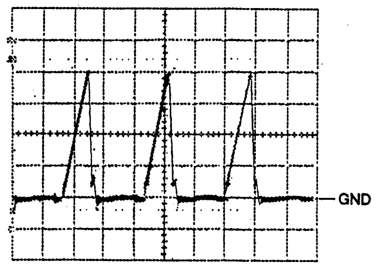
⑯ **Q106 Collector**
V range : 2V/div.
H range : 5 μsec/div.



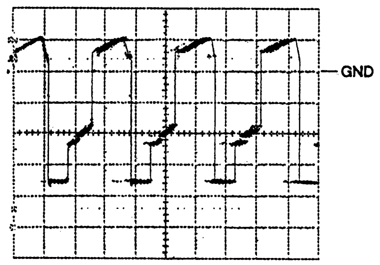
⑰ **Q106 Emitter**
V range : 2V/div.
H range : 10 μsec/div.



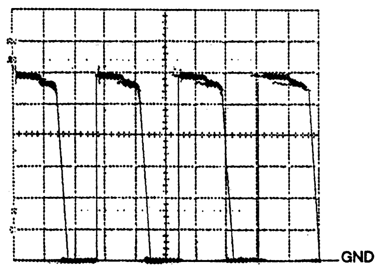
⑱ **Q105 Emitter**
V range : 0.2V/div.
H range : 10 μsec/div.



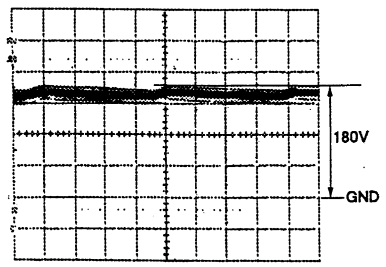
⑲ **Q105 Base**
V range : 2V/div.
H range : 10 μsec/div.



⑳ **Q105 Collector**
V range : 50V/div.
H range : 10 μsec/div.



㉑ **D101 Catode**
V range : 50V/div.
H range : 2 μsec/div.



7. PCB PARTS LIST

NOTES:

- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*
  Ex.1 When there are 2 effective digits(any digit apart from 0), such as 560 ohm and 47k ohm(tolerance is shown by J=5%, and K=10%).
  560 Ω → 56×10^1 → 561 ························ RD1/8PM$\boxed{5}\boxed{6}\boxed{1}$J
  47k Ω → 47×10^3 → 473 ························ RD1/4PS$\boxed{4}\boxed{7}\boxed{3}$J
  0.5 Ω → 0R5 ························ RN2H$\boxed{0}\boxed{R}\boxed{5}$K
  1 Ω → 010 ························ RS1P$\boxed{0}\boxed{1}\boxed{0}$K
  Ex.2 When there are 3 effective digits(such as in high precision metal film resistors).
  5.62k Ω → 562×10^1 → 5621 ························ RN1/4PC$\boxed{5}\boxed{6}\boxed{2}\boxed{1}$F
- *Parts marked by ☆ are important parts which relate in X-rays radiation. If any of these parts need to be replaced, always replace with specified parts.*
- *Parts marked by × are important parts which relate in X-rays radiation. If a failure occurs in any of these parts, replace the printed circuit board assembly where the relevant part has already been adjusted as a working component. Do not replace the actual part itself. If any part marked by × is replaced, there is danger of being exposed to X-rays.*

LIST OF ASSEMBLIES

Mark	No.	Description	Part No.
		TUNER-VIDEO ASSEMBLY	AWV1355
☆		POWER SUPPLY ASSEMBLY	AWV1360
NSP		AV I/O ASSEMBLY	AWV1263
		├AUDIO SELECTOR ASSEMBLY	AWZ4185
		├P INP SELECTOR ASSEMBLY	AWZ4188
		├REC MUTE ASSEMBLY	AWZ4470
		└AV I/O-P IN P-Y/C SEP ASSEMBLY	AWZ4240
NSP		CONVERGENCE ASSEMBLY	AWV1357
		├CONVERGENCE ASSEMBLY	AWZ5058
		├R.CRT DRIVE ASSEMBLY	AWZ4179
		├G.CRT DRIVE ASSEMBLY	AWZ4180
		└B.CRT DRIVE ASSEMBLY	AWZ4181
NSP		FRONT CONTROL ASSEMBLY	AWV1359
		├W FRONT CONTROL ASSEMBLY	AWZ5063
		├RECEIVER ASSEMBLY	AWZ5064
☆		├V-AMP ASSEMBLY	AWZ5065
		├MICROCOMPUTER ASSEMBLY	AWZ5066
		├A CONNECTOR ASSEMBLY	AWZ5067
		├B CONNECTOR ASSEMBLY	AWZ5068
		└CLOSED-CAPTION ASSEMBLY	AWZ5069

TUNER-VIDEO ASSEMBLY

SEMICONDUCTORS

Mark	No.	Description	Part No.
	IC352		CXA1124AS
	IC302		LA4280-P
	IC303		M5222L
	IC453		MC34064P
	IC351		NJM4558LD
	IC253		NJM7809FAS
	IC451		PD5217B
	IC254		TA8801AN
	IC452		X24C02P
	Q232-Q234, Q238-Q242, Q246, Q248, Q249, Q252, Q275, Q280, Q282, Q284, Q285, Q288, Q290, Q297, Q298, Q300, Q307, Q355, Q365		2SA933S
⚠	Q454, Q460, Q470, Q487-Q491		2SA933S
	Q231, Q235-Q237, Q243-Q245, Q251, Q253-Q257, Q262-Q266, Q271, Q272-Q274, Q276-Q279, Q281, Q283, Q286, Q289, Q291-Q294, Q301, Q302, Q305, Q306, Q308, Q353, Q354, Q361, Q363, Q364, Q366		2SC1740S
⚠	Q445, Q446, Q450-Q453, Q455, Q462, Q467-Q469, Q486		2SC1740S
	Q303, Q304		2SC3327
⚠	Q356, Q461		2SD438
⚠	Q459		XDC124ES
	Q367, Q368, Q496		XDC124ES
	Q456, Q458, Q464-Q466, Q493		XDC143ES
	D282-D287		11E2
	D236, D237, D239, D242, D244, D253, D255-D258, D260-D263, D265, D267, D269, D273, D278-D281, D290, D292, D299, D302-D304, D307-D315, D317-D320, D339, D341, D342-D344, D351-D360, D363-D373, D450-D454, D457-D459, D461, D463-D467, D471-D478		1SS252
	D251		HZS11A1L
	D231-D235, D238, D241, D243, D245, D252, D259, D264, D266, D268, D270, D271, D272, D274, D275, D291, D293-D298, D300, D335-D338, D374, D405-D410		RD15ESB
	D361		RD33ESB3
	D316		RD5.1ESB
	D340, D460		RD5.1ESB2
	D455		RD5.6ESB2
	D362		RD5.6ESB3

Mark	No. Description	Part No.
	D305, D306, D401-D404, D411, D413, D414, D416-D429, D469, D479-D483, D486-D499	RD6.8ESB
	COILS	
	L301, L302	ATH-133
	L351	LAU1R8J
	L401	LAU220K
	L263	LAU390K
	L256	LAU3R9K
	L254	LAU470K
	L260-L262	LAU4R7K
	L255, L257	LAU8R2K
	CAPACITORS	
	TC401	ACM-020
	C379	CCCCH100D50
	C960	CCCCH120J50
	C961	CCCCH150J50
	C538	CCCCH560J50
	C335, C396-C398	CCCSL121J50
	C334, C399-C401	CCCSL151J50
	C409	CCCSL220J50
	C406	CCCSL270J50
	C336	CCCSL271J50
	C491-C494	CCDSL101J50
	C506	CEANPR22M50
	C341, C348, C353, C514, C953, C971-C976	CEAS010M50
	C460, C466, C986	CEAS0R1M50
	C347, C431, C432, C450, C511, C982	CEAS100M50
	C356, C539, C956, C963, C978	CEAS101M10
	C354, C385, C386, C403	CEAS101M16
	C352, C496	CEAS102M16
	C481, C482	CEAS102M25
	C455	CEAS221M10
	C462, C467	CEAS221M35
	C331, C345, C358, C360, C363, C382, C448, C449, C454, C456, C517	CEAS2R2M50
	C526, C527	CEAS330M16
	C452, C457	CEAS330M35
	C533	CEAS331M16
	C516, C985	CEAS3R3M50
	C349, C433, C441, C447, C507, C522, C987, C989	CEAS470M16
	C453	CEAS470M50
	C346	CEAS471M10
	C444	CEAS471M16
	C464	CEAS471M35
	C351, C498, C501, C505, C510, C518, C519, C520	CEAS4R7M50
	C531	CEAS6R8M50
	C367	CEASR22M50
	C502	CEASR47M50
	C513	CEJA2R2M50
	C361, C365	CFTXA104J50

Mark	No. Description	Part No.
	C521	CFTXA473J50
	C954, C958, C977, C984, C990	CKCYB103K50
	C387, C955	CKCYB222K50
	C344	CKCYB562K50
	C362, C364, C371, C376	CKCYF103Z50
	C350, C355, C357, C372, C374, C375, C377, C461, C463, C468, C472, C480, C485, C486, C957, C962, C983, C988, C992, C994	CKCYF473Z50
	C525	CKCYX473M25
	C495, C523	CKDYB102K50
	C959	CKDYB103K50
	C499	CKDYB471K50
	C497, C508	CKDYF103Z50
	C528, C529, C952	CKDYF473Z50
	C451, C458	CKMYB151K50
	C445, C446	CKMYB561K50
	C359, C524	CQMA103J50
	C504	CQMA123J50
	C368, C535, C536	CQMA124J50
	C384	CQMA183J50
	C370, C373	CQMA223J50
	C509	CQMA272J50
	C381	CQMA472J50
	C405	CQMA473J50
	C503, C995	CQMA562J50
	C500	CQMA563J50
	RESISTORS	
	VR251 (100Ω)	ACP1037
	VR252 (220Ω)	ACP1038
	VR351 (10kΩ)	ACP1043
	VR354 (22kΩ)	ACP1044
	VR353 (47kΩ)	ACP1045
	R680	RA6T153J
	R1698, R1699, R1715, R1721, R1722	RD1/2PM100J
	R817, R821	RD1/2PM152J
	R1694	RD1/2PM270J
	R1716, R1719, R1720	RD1/2PM271J
⚠	R951	RD1/2PMFL5R6J
⚠	R876	RD1/2PMFL680J
	R579, R580	RD1/4PM221J
	R590	RD1/4PM471J
⚠	R818, R825	RD1/4PMFL100J
	R737	RD1/4PMFL101J
⚠	R785	RD1/4PMFL150J
⚠	R819, R823	RD1/4PMFL2R2J
⚠	R591, R620, R687, R1556	RD1/4PMFL3R9J
	R594	RN1/4PC1002F
	R929	RN1/4PC3301F
	R595	RN1/4PC3901F
	R933	RN1/4PC4302F
	R939, R941	RN1/4PC4702F
	R928	RN1/4PC6801F

Mark	No. Description	Part No.
	R608	RN1/4PC6802F
⚠	R1577	RS2LMF3R3J
⚠	R1561	RS2LMF4R7J
⚠	R862	RS2LMF560J
⚠	R838	RS2LMF6R8J
	Other Resistors	RD1/8PM□□□J

OTHERS

Mark	No. Description	Part No.
	X251 CERAMIC RESONATOR(503kHz)	ASS1019
	X252 CRYSTAL RESONATOR(3.579545MHz)	ASS1020
	X451 CERAMIC OSCILLATOR(4.19MHz)	ASS1022
	DL253 DELAY LINE	ATN1013
	TV FRONT END+IF PACK	AXF1062

POWER SUPPLY ASSEMBLY

SEMICONDUCTORS

Mark	No. Description	Part No.
⚠	IC101, IC102	ON3161-Q
	Q169, Q172	2SA1145
	Q186	2SA1237
	Q101, Q110, Q159, Q165, Q168	2SA933S
×NSP	Q167, Q170	
⚠	Q106	2SB824
	Q191	2SB950A
	Q102-Q104, Q107, Q112, Q151-Q153, Q158, Q166, Q173, Q187, Q188	2SC1740S
	Q189	2SC1845
	Q108, Q176	2SC2705
⚠	Q175	2SC3332
⚠	Q105	2SC3451
⚠	Q157	2SC4256
⚠	Q177	2SC4747
⚠	Q109, Q111, Q171, Q174	2SD1276A
	Q190	2SD1276A
⚠	D114, D116	11DF1FD
⚠	D168	11DF2FD
	D102, D103, D105, D106	1SS145
	D107-D113, D115, D117-D119, D121, D151, D152, D155-D157, D159, D160, D161, D163, D165-D167, D182-D185, D187	1SS252
⚠	D170	CTU-G2DR
⚠	D171, D174, D178	ES1F
	D123	FMP-G12S
	D129	HZS18-1L
	D127	HZS6A1L
	D104, D128, D130	HZS6B1L
	D120	HZS6C2L
⚠	D101	RB604
×NSP	D153	
	D175	RD15ESB
⚠	D173	RD39ESB4
⚠×NSP	D158	
×NSP	D188	
⚠	D126, D169	RG4A
⚠	D122	RL2Z
⚠	D124	RL4Z
⚠	D172	RU1

COILS AND TRANSFORMERS

Mark	No. Description	Part No.
⚠	L101, L102	ATF1031
	L103	ATH-133
	L151	ATL1085
	L153	ATL1103
	L104-L109	ATX1023
	L154	LTA272J
⚠	T102	ATK1064
⚠	T101	ATT1194
⚠	T152	ATK1045
⚠×NSP	T151	

CAPACITORS

Mark	No. Description	Part No.
⚠	C101, C102 (0.1μ/250V)	ACE-507
⚠	C105, C106, C108, C109 (6800P/250V)	ACE1009
	C133 (100P/2kV)	ACG-032
	C118, C124 (1000P/2kV)	ACG-040
⚠	C110, C111, C113, C114 (0.01μ/250V)	ACG-501
	C126 (3300P/2kV)	ACG1008
	C246, C249 (390P/2kV)	ACG1011
	C245, C250 (470P/2kV)	ACG1014
	C234 (680P/2kV)	ACG1024
	C119 (4.7μ/250V)	ACH-378
	C232 (10μ/160V)	ACH1117
	C122 (47μ)	ACH1132
	C136 (560μ/160V)	ACH1146
⚠	C116 (470μ/200V)	ACH1147
⚠	C117 (820μ/200V)	ACH1148
	C220, C227, C229	CCCSL101K500
	C252, C259	CCCSL151J50
	C120, C123, C130, C131	CCCSL221K500
	C128, C148, C207	CEAS010M50
	C112, C146, C251	CEAS100M50
	C218	CEAS101M10
	C103	CEAS102M25
	C150	CEAS221M16
	C142	CEAS331M35
	C107, C115	CEAS470M16
	C247	CEAS4R7M50
	C231	CEHAQ010M50
	C224	CEHAQ100M2C
	C145, C149, C214, C223, C236, C255	CEHAQ100M50
	C262	CEHAQ101M10
	C225	CEHAQ101M16
	C235	CEHAQ220M2C
	C244	CEHAQ220M50
	C216, C226	CEHAQ221M10
	C215	CEHAQ221M16
	C135, C138	CEHAQ222M35
	C134	CEHAQ332M35
	C129	CEHAQ471M16
	C253, C254	CEHAQ471M35
	C238	CFPHW123H3D
	C237	CFPHW153H3A
	C202	CFPHW472H3D
⚠	C241	CFPMW185J2D
	C239	CFPMW824J2D
	C121	CFTXA474J50

Mark	No. Description	Part No.
	C233	CKCYB102K50
	C230	CKCYB102K500
	C201	CKCYB103K50
	C257	CKCYB122K50
	C258	CKCYB152K50
	C243	CKCYB182K500
	C228	CKCYB222K500
	C261	CKCYB331K50
	C147, C260	CKCYB681K50
	C104, C125, C219	CKCYF103Z50
	C209, C248	CKCYF472Z500
	C140, C141, C144, C211, C242	CKCYF473Z50
	C240	CKCYX104M16
	C139, C143	CKDYF103Z500
	C221	CQMA103J50
	C203	CQMA104J50
	C127	CQMA123J50
	C213	CQMA223J50
	C210	CQMA333J50
	C208	CQMA683J50

RESISTORS

Mark	No. Description	Part No.
	VR101	VRTS6VS102
×NSP	VR151	
	VR154	VRTS6VS223
	VR181	VRTS6VS471
×NSP	VR152	
⚠	R102, R103 (2.2MΩ, 1/2W)	ACN-208
	R207 (47Ω, 1/2W)	ACN-225
	R208 (33kΩ, 1/2W)	ACN1011
⚠	R111, R113, R124, R144, R292 (1Ω, 5W)	ACN1032
	R131, R310-R312	RD1/2PM101J
	R204	RD1/2PM122J
	R127, R129	RD1/2PM241J
	R285	RD1/2PM361J
	R298	RD1/2PM391J
⚠	R281	RD1/2PMFL222J
⚠	R205, R320	RD1/2PMFL562J
⚠	R122	RD1/4PMFL101J
⚠	R295	RD1/4PMFL2R2J
⚠	R238, R271, R273	RD1/4PMFL3R9J
⚠	R280, R293	RD1/4PMFL470J
⚠	R288	RD1/4PMFL471J
⚠	R125	RD1/4PMFL682J
	R300	RN1/2PC3602F
	R299	RN1/2PC3902F
	R133, R135	RN1/4PC1603F
	R155	RN1/4PC2101F
	R156	RN1/4PC2431F
	R132	RN1/4PC3601F
×NSP	R235	
⚠	R308, R309	RS1LMF010J
⚠	R157	RS1LMF120J
⚠	R294	RS1LMF220J
⚠	R304, R305	RS1LMF331J
⚠	R117	RS1LMF473J
	R226	RS1LMF562J
⚠×NSP	R291	
⚠	R321, R324, R325	RS2LMF010J
⚠	R215	RS2LMF123J
⚠	R203, R221	RS2LMF153J
⚠	R142	RS2LMF223J
	R159	RS2LMF4R7J
⚠	R120, R121	RS2LMFR33J
⚠	R158	RS3LMF181J
⚠	R216	RS3LMF393J
⚠	R217	RS3LMF393J
⚠	R287	RS3LMF682J
	R136, R137	RT10PD180K
	R123	RT10PD6R8K
	R202, R276	RT5PD820K
×NSP	R290	
×NSP	R297	
×NSP	R278	
×NSP	R237	
×NSP	R274	
×NSP	R268	
×NSP	R264	
×NSP	R255	
×NSP	R250	
×NSP	R306	
	Other Resistors	RD1/8PM□□□J

OTHERS

Mark	No. Description	Part No.
⚠	RY102 RELAY	ASR1027
⚠	RY101 RELAY	ASR1036
	CN153-CN155 PLUG 6-P	AKM1072
⚠	FU101 FUSE (8A/125V)	AEK1002
	SHIELD COVER	ANH1166
	MICA SHEET	AEP-056

AUDIO SELECTOR ASSEMBLY

SEMICONDUCTORS

Mark	No. Description	Part No.
	IC942	TC4052BP
	IC941	TC4066BP
	Q941-Q944	2SC1740S
	D941-D950	RD13ESB

CAPACITORS

Mark	No. Description	Part No.
	C781-C790	CEAS010M50
	C794	CEAS101M25
	C791, C793	CKDYF473Z50

RESISTORS

Mark	No. Description	Part No.
	All Resistors	RD1/8PM□□□J

P IN P SELECTOR ASSEMBLY

SEMICONDUCTORS

Mark	No. Description	Part No.
	IC571, IC572	NJM2234L
	Q571	2SA933S
	D571-D580	1SS252

Mark	No.	Description	Part No.

CAPACITORS

	C41, C42, C44-C46, C48		CEAS100M50
	C49		CEAS101M25
	C43, C47		CKCYB103K50

RESISTORS

	All Resistors		RD1/8PM□□□J

REC MUTE ASSEMBLY

SEMICONDUCTORS

	Q687, Q689, Q692		2SA933S
	Q688, Q690, Q691, Q693		2SC1740S
	D672-D677		1SS252

CAPACITORS

	C171, C172		CEAS220M50
	C173		CEAS470M25
	C174		CEAS471M16

RESISTORS

	All Resistors		RD1/8PM□□□J

AV I/O-P IN P-Y/C SEP ASSEMBLY

● AV I/O Section

SEMICONDUCTORS

	IC861		TC4051BP
	Q674, Q676, Q866		2SA933S
	Q678, Q679, Q681-Q686, Q704		2SC1740S
	Q675		XDC124ES
	D678-D680		RD18ESB

CAPACITORS

	C95		CEANP100M35
	C88, C89		CEAS010M50
	C81, C83, C84, C90, C97-C99, C868		CEAS100M50
	C92, C94		CEAS101M10
	C86, C100, C178		CEAS101M25
	C87		CEAS102M10
	C93		CEAS471M16
	C177		CKDYF473Z50

RESISTORS

	R1050		RD1/2PM331J
⚠	R1051		RD1/2PMFL100J
⚠	R1025		RD1/2PMFL3R9J
⚠	R1065		RS1LMF4R7J
	Other Resistors		RD1/8PM□□□J

OTHERS

	PIN JACK (9P)		AKB1199

Mark	No.	Description	Part No.

● P IN P Section

SEMICONDUCTORS

	IC706		MB3511P
	IC702		MB40176PF
	IC703		MB81C1501PF
	IC704		MB86153BPF
	IC705		NJM78M05FAS
	IC701		TC4094BP
	Q703, Q705, Q707, Q711, Q712, Q716, Q717, Q719		2SA933S
	Q701, Q702, Q708-Q710, Q713-Q715, Q718		2SC1740S
	D701-D703		1SS252
	D706-D709		RD5.6ESB

COILS

	L702		ATH1046
	L708, L709, L711, L731, L732		ATX1008
	L715		LAU100K
	L718		LAU101K
	L704		LAU151K
	L717		LAU220K
	L701, L705, L706, L710, L712, L713		LAU2R2J
	L703, L721		LAUR22M

CAPACITORS

	C851, C854		CCCCH100D50
	C832, C834, C859, C860		CCCCH150J50
	C836, C855		CCCCH180J50
	C911		CCCCH270J50
	C830, C866		CCCCH680J50
	C873, C897		CCCSL470J50
	C827, C839, C848, C867, C871, C876, C878, C898		CCDSL101J50
	C912		CCDSL221J50
	C842, C865, C888-C890		CEAS010M50
	C828, C829, C833, C857		CEAS100M50
	C825, C849, C861, C870, C881, C884, C886, C892, C893, C895		CEAS101M10
	C869, C877		CEAS101M25
	C858		CEAS102M6
	C821, C874, C879		CEAS221M10
	C846, C899		CEAS2R2M50
	C837, C852		CEAS3R3M50
	C900, C901		CEAS470M25
	C882, C905		CEAS471M10
	C823		CEAS471M16
	C847		CEASR22M50
	C843		CEASR33M50
	C838, C844		CEASR47M50
	C826, C850, C862, C872, C875, C885, C887, C907, C909, C910		CKCYF473Z50
	C835, C856		CKDYB102K50
	C863		CKDYB103K50
	C831		CKDYF103Z50
	C880, C891, C894		CKDYF473Z50
	C883		CQMA102J50

Mark	No.	Description	Part No.
	C841, C845		CQMA103J50
	C864		CQMA104J50
	C853		CQMA822K50

RESISTORS

Mark	No.	Description	Part No.
	VR701		VRTB6VS473
	R1382		RN1/4PC2702F
		Other Resistors	RD1/8PM□□□J

OTHERS

Mark	No.	Description	Part No.
	X701, X702	CRYSTAL RESONATOR (14.31818MHz)	ASS1056
		SHIELD CASE	ANK1202
		SHIELD PLATE	ANK1203

● Y/C SEP Section

SEMICONDUCTORS

Mark	No.	Description	Part No.
	Q904, Q908, Q915, Q916		2SC1740S
	D901-D906		1SS252

CAPACITORS

Mark	No.	Description	Part No.
	C546, C548		CEAS101M10
	C582		CEAS470M25
	C550		CKDYF473Z50

RESISTORS

Mark	No.	Description	Part No.
	R1167		RD1/2PMFL3R9J
	R1170		RD1/4PMFL470J
		Other Resistors	RD1/8PM□□□J

OTHERS

Mark	No.	Description	Part No.
	X901	COMB FILTER MODULE	AXX1028

CONVERGENCE ASSEMBLY

SEMICONDUCTORS

Mark	No.	Description	Part No.
	IC651-IC653		M5238LF
	IC607		NJM78M05FAS
	IC608		NJM79M05FA
	IC601, IC602		PA0053A
	IC603, IC604		PM0002A
⚠	IC606		STK4277-SL
	Q601, Q602		2SA933S
	Q603		2SC1740S
	D603, D605, D609, D610, D639-D643		1SS252
	D606, D607, D611-D638, D644-D653		RD12ESB
	D604		RD4.7ESB2

CAPACITORS

Mark	No.	Description	Part No.
	C723, C724, C749, C750		CCMSL101J50
	C755		CCMSL470J50
	C692, C717-C719, C738		CEAS010M50
	C691, C695, C714, C744		CEAS100M50
	C712, C722, C753, C756, C762, C763		CEAS101M10
	C764		CEAS102M6
	C751, C752		CEAS221M10
	C739, C740		CEAS330M16
	C698-C700, C707, C726-C728, C734		CEAS331M6
	C741		CEAS470M10
	C742		CEAS4R7M50
	C720		CEASR47M50
	C702, C706		CEHAQ010M50
	C696, C697		CEHAQ330M35
	C745, C746		CEHAQ471M35
	C701, C703-C705, C708, C710, C711, C713, C715, C730-C733, C735, C736, C747, C748, C754, C757-C761		CKCYF473Z50
	C709		CQMA102J50
	C693		CQMA103J50
	C743		CQMA104J50
	C716		CQMA152J50
	C729, C737		CQMA224J50
	C725		CQMA272J50
	C694		CQMA392J50
	C721		CQMA471J50

RESISTORS

Mark	No.	Description	Part No.
	VR651-VR654 (4.7kΩ)		ACP1042
	VR655 (47kΩ)		ACP1045
	VR656 (220kΩ)		ACP1047
⚠	R454		RD1/4PMF270J
⚠	R555-R559		RS3LMF6R8J
	R391, R392		RT5PD470K
⚠	R397, R404		RT7PD4R7K
		Other Resistors	RD1/8PM□□□J

R.CRT DRIVE ASSEMBLY

SEMICONDUCTORS

Mark	No.	Description	Part No.
	Q801		2SC4001
	D801		1SS252

COILS

Mark	No.	Description	Part No.
	L803		LAU101K
	L801, L802		LAU470K

CAPACITORS

Mark	No.	Description	Part No.
	C924 (1000P/2kV)		ACG1001
	C923 (4.7μ/250V)		ACH-378
	C921		CEAS101M10
	C922		CKCYB681K50

RESISTORS

Mark	No.	Description	Part No.
	R755 (47Ω, 1/2W)		ACN-225
	R752 (1kΩ, 1/2W)		ACN1006
⚠	R753, R754		RS3LMF332J
		Other Resistors	RD1/8PM□□□J

OTHERS

Mark	No.	Description	Part No.
⚠		CRT SOCKET	AKG1004

Mark	No.	Description	Part No.

G.CRT DRIVE ASSEMBLY

SEMICONDUCTORS

	Q821		2SC4001
	D821		1SS252

COILS

	L823		LAU101K
	L821, L822		LAU470K

CAPACITORS

	C934	(1000P/2kV)	ACG1001
	C933	(4.7µ/250V)	ACH-378
	C931		CEAS101M10
	C932		CKCYB681K50

RESISTORS

	R765	(47Ω, 1/2W)	ACN-225
	R762	(1kΩ, 1/2W)	ACN1006
⚠	R763, R764		RS3LMF332J
	Other Resistors		RD1/8PM□□□J

OTHERS

⚠	CRT SOCKET		AKG1004

B.CRT DRIVE ASSEMBLY

SEMICONDUCTORS

	Q841		2SC4001
	D841		1SS252

COILS

	L843		LAU101K
	L841, L842		LAU470K

CAPACITORS

	C944	(1000P/2kV)	ACG1001
	C943	(4.7µ/250V)	ACH-378
	C941		CEAS101M10
	C942		CKCYB681K50

RESISTORS

	R775	(47Ω, 1/2W)	ACN-225
	R772	(1kΩ, 1/2W)	ACN1006
⚠	R773, R774		RS3LMF332J
	Other Resistors		RD1/8PM□□□J

OTHERS

⚠	CRT SOCKET		AKG1004

W FRONT CONTROL ASSEMBLY

SEMICONDUCTORS

	IC551		PD5136
	D553, D554		1SS252
	D552		RD3.0ESB

SWITCHES

	S551-S565		ASG1034

Mark	No.	Description	Part No.

CAPACITORS

	C62, C63		CCDCH221J50
	C66		CEAS101M10
	C64		CEAS2R2M50
	C61		CFTXA104J50
	C65		CGMYX103M16
	C67		CKDYB472K50

RESISTORS

	R1885		RD1/2PMF820J
	Other Resistors		RD1/8PM□□□J

OTHERS

	X551	CERAMIC OSCILLATOR(480kHz)	ASS1043

RECEIVER ASSEMBLY

SEMICONDUCTORS

	D551		AEL1011

CAPACITORS

	C69		CCMSL121J50
	C70		CEJA100M16

RESISTORS

	All Resistors		RD1/8PM□□□J

OTHERS

	REMOTE RECEIVER UNIT		AXX1033

V-AMP ASSEMBLY

SEMICONDUCTORS

	IC201-IC203		NJM4558DXP
	Q201-Q203, Q206, Q210		2SC1740S
	Q204, Q205		2SC3064
	D202, D203, D207		1SS252
	D201, D204		RD15ESB3

CAPACITORS

	C288		CEANP100M35
	C274, C280		CEAS100M50
	C273, C289		CEHAQ470M16
	C271		CKCYB222K50
	C272, C275-C278		CKCYF473Z50
	C279		CQMA102J50

RESISTORS

×NSP	R354		
×NSP	R357		
	Other Resistors		RD1/8PM□□□J

MICROCOMPUTER ASSEMBLY

SEMICONDUCTORS

Mark	No.	Description	Part No.
	IC81		TC4066BP
	Q82-Q84, Q86, Q88		2SA933S
	Q81, Q85, Q87, Q89		2SC1740S
	D81-D90		1SS252

CAPACITORS

Mark	No.	Description	Part No.
	C33		CEAS010M50
	C35, C36, C38		CEAS100M50
	C34		CEAS470M16
	C32, C37		CKCYF473Z50

RESISTORS

Mark	No.	Description	Part No.
	All Resistors		RD1/8PM□□□J

A CONNECTOR ASSEMBLY

A CONNECTOR assembly has not service part.

B CONNECTOR ASSEMBLY

B CONNECTOR assembly has not service part.

CLOSED-CAPTION ASSEMBLY

SEMICONDUCTORS

Mark	No.	Description	Part No.
	IC2001		PD5218A
	Q2004		2SC1740S
	Q2005		XDC143ES
	D2005, D2007, D2009, D2010, D2014, D2015, D2018-D2021		1SS252
	D2001-D2004, D2006, D2008, D2011-D2013, D2016, D2017		RD6.8ESB

CAPACITORS

Mark	No.	Description	Part No.
	C2003, C2008		CEAS0R1M50
	C2010		CEAS100M50
	C2005		CEAS101M10
	C2009		CEAS101M16
	C2007		CKCYB561K50
	C2006, C2012		CKCYF473Z50
	C2002		CQMA102J50

RESISTORS

Mark	No.	Description	Part No.
	R2036		RA8T103J
	R2034, R2035		RA9T103J
	Other Resistors		RD1/8PM□□□J

OTHERS

Mark	No.	Description	Part No.
	X2002	CERAMIC RESONATOR(8.00MHz)	ASS1015
	X2001	CERAMIC RESONATOR(12MHz)	ASS1062

8. ADJUSTMENT

When adjusting the convergence, use of another remote control unit having separate INPUT SELECTOR keys for LD, TV and VIDEO 1, such as AXD1277 (CU-SD062) supplied with the SD-P5065-K, in addition to the supplied remote control unit will improve the operability.

- Adjustment items are described as follows.

8.1 FACTORY ADJ MODE
8.2 WHEN POWER SUPPLY ASSEMBLY IS REPAIRED
8.3 WHEN POWER SUPPLY ASSEMBLY IS REPLACED
8.4 WHEN TUNER-VIDEO ASSEMBLY IS REPAIRED OR REPLACED
(Convergence, Video, Control and Tuner sections)
8.5 WHEN CONVERGENCE ASSEMBLY IS REPAIRED OR REPLACED
8.6 WHEN AV I/O-P IN P-Y/C SEP ASSEMBLY IS REPAIRED OR REPLACED
8.7 WHEN R, G OR B CRT DRIVE ASSEMBLY IS REPAIRED OR REPLACED
8.8 WHEN CRT ASSEMBLY R, G OR B IS REPLACED
8.9 WHEN LENS ASSEMBLY IS REPLACED
8.10 WHEN OTHER ASSEMBLIES ARE REPAIRED OR REPLACED
8.11 ANODE VOLTAGE MEASURING METHOD
8.12 ON FOCUS ADJUSTMENT WITH THE LENS ASSEMBLY

- These adjustment procedures are described separately for adjustments following assembly exchange and adjustments following repairs.

- When replacing the assemblies, always use perfect-moving replacements.

- Symbols in parentheses next to the adjustment position ( ) indicate denotes the relevant assembly to be adjusted.
  S : POWER SUPPLY assembly
  VR1 : Focus variable resistor
  V : TUNER-VIDEO assembly
  A : AV I/O-P IN P-Y/C SEP assembly

- The adjustment points and TP terminals on the each assembly are shown in Fig. 8-6 thru 8-9.
  Fig. 8-6:
  W FRONT CONTROL assembly, RECEIVER assembly and focus variable resistor.
  Fig. 8-7:
  TUNER-VIDEO assembly,
  AV I/O-P IN P-Y/C SEP assembly and
  POWER SUPPLY assembly.
  Fig. 8-8:
  R., G., B. CRT DRIVE assemblies and deflection yoke.
  Fig. 8-9:
  Lens assembly (Red, Green, Blue).

- Set the input terminals at the rear panel as follows unless otherwise noted.
  VIDEO signal : INPUT LD VIDEO terminal
  AUDIO signal : INPUT LD AUDIO terminal

- Set the picture quality to standard by remote control unit unless otherwise noted.

8.1 FACTORY ADJ MODE

8.1.1 FACTORY ADJ Mode

FACTORY ADJ mode is provided to adjust the picture and sound-quality control functions of this model and to confirm the variable ranges of these functions. FACTORY ADJ mode is activated and deactivated by pressing S558 through a small hole in the center of the front panel using a thin rod. Any operation in FACTORY ADJ mode is executed using the remote control.

8.1.2 Hierarchy of FACTORY ADJ Mode

Fig. 8 - 1 shows the hierarchy of FACTORY ADJ mode.
By pressing S558 through a small hole in the center of the front panel, FACTORY ADJ mode is activated. This mode contains RANGE, OFFSET and CONVER modes.
RANGE and OFFSET modes are cyclically switched each time you push the MUTE button of the remote control. To enter CONVER mode, press the STD/AV MEM button in OFFSET mode. When CONVER mode is initiated, the unit enters manufacturing CONVER ADJ mode. Press the MUTE button to activate CONVER ADJ mode which enables actual adjustments.
To release FACTORY ADJ mode, press S558 again.

Note: FACTORY ADJ mode may not function properly if you activate it immediately after deactivating it. In this case, reactivate FACTORY ADJ mode after turning off power and turning it on again.

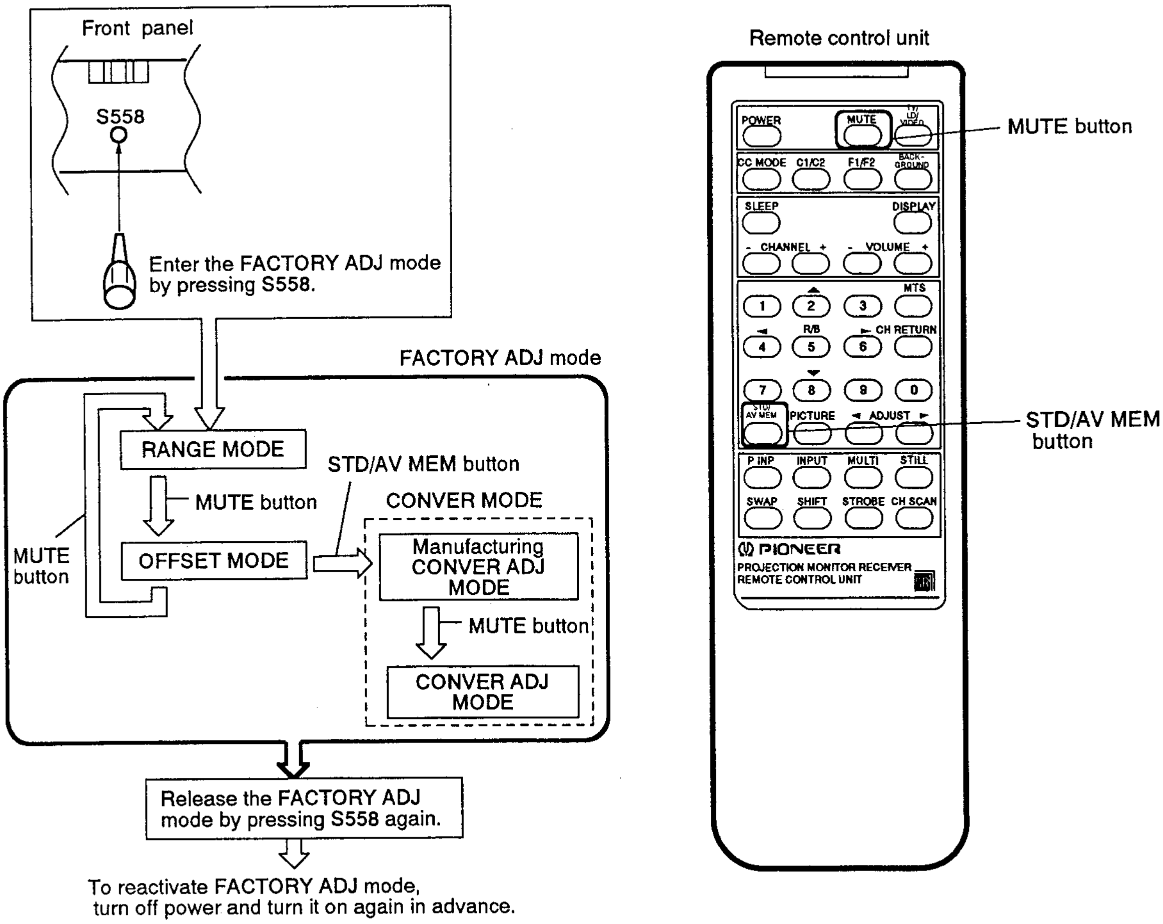

Front panel
S558
Enter the FACTORY ADJ mode by pressing S558.
FACTORY ADJ mode
RANGE MODE
MUTE button
OFFSET MODE
MUTE button
STD/AV MEM button
CONVER MODE
Manufacturing CONVER ADJ MODE
MUTE button
CONVER ADJ MODE
Release the FACTORY ADJ mode by pressing S558 again.
To reactivate FACTORY ADJ mode, turn off power and turn it on again in advance.
Remote control unit
POWER
MUTE
TV/LD/VIDEO
CC MODE
C1/C2
F1/F2
BACK-GROUND
SLEEP
DISPLAY
- CHANNEL +
- VOLUME +
MTS
1
2
3
R/B
CH RETURN
4
5
6
7
8
9
0
STD/AV MEM
PICTURE
◄ ADJUST ►
P INP
INPUT
MULTI
STILL
SWAP
SHIFT
STROBE
CH SCAN
PIONEER
PROJECTION MONITOR RECEIVER REMOTE CONTROL UNIT
MUTE button
STD/AV MEM button

Fig. 8 - 1 Hierarchy of FACTORY ADJ Mode

8.1.3 RANGE Mode

In RANGE mode, the three points, center (CNT), minimum (MIN) and maximum (MAX), in the service variable ranges of the picture and sound-quality control functions can be easily confirmed. By using this mode, it is not necessary to use the ADJUST buttons to see the end levels of the ranges.

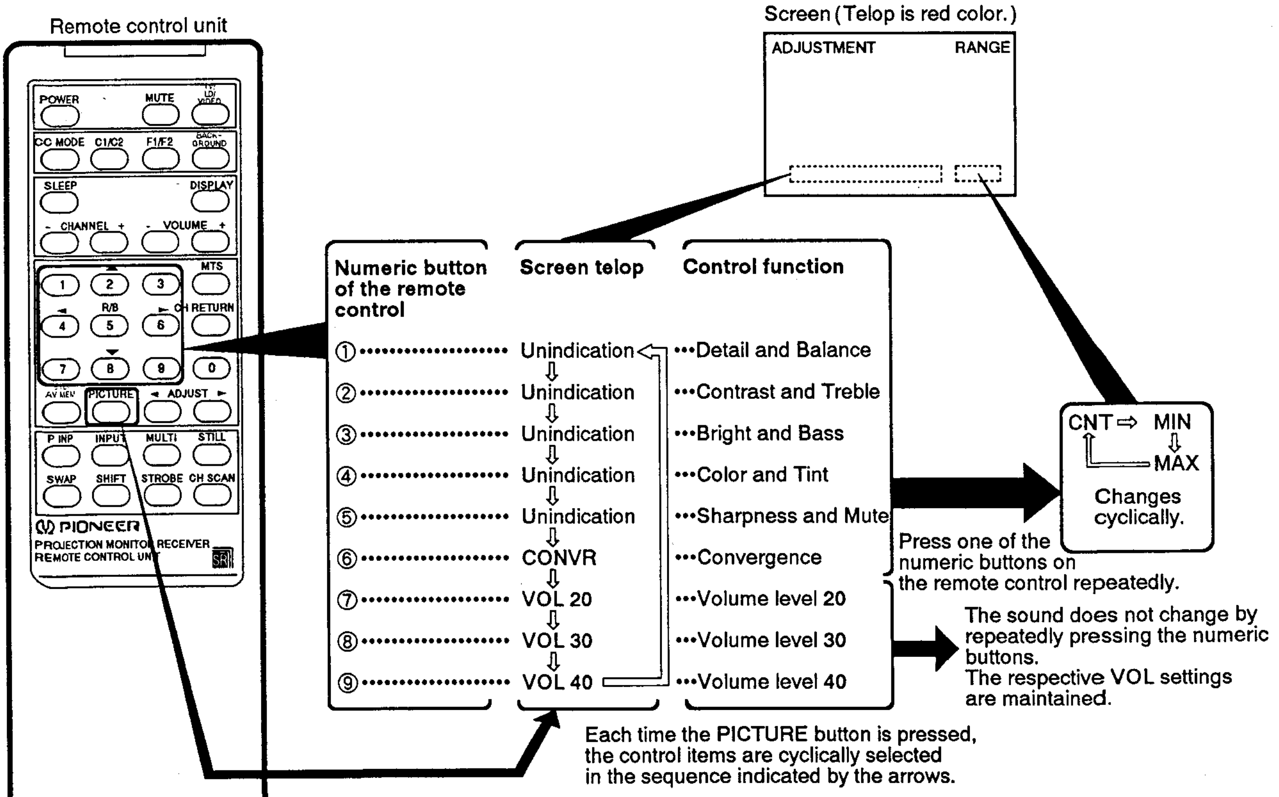
Even when a CNT - to - MIN operation is performed in this mode, the user convergence returns to the user-set position and the picture quality returns to the user STD setting when FACTORY ADJ mode is released.

Fig. 8 - 2 shows the hierarchy of RANGE mode. As shown in the figure, the first time you press one of the numeric button of the remote control, the control item indicated for that button is selected. Each subsequent pressing of the same key cyclically sets the item to CNT, MIN and MAX. The control items can also be cyclically selected by pressing the PICTURE button.

For picture quality, the center, maximum and minimum points of the variable range can be confirmed. The other items change as follows.

- Convergence······ The H - and V - STATIC data change as follows. Do not hold MIN or MAX status for an extended period. The convergence assembly may be damaged.
  CNT : 0, MIN : − 128, MAX : 127
- Balance······ CNT : Center, MIN : L ch only, MAX : R ch only
- Mute········ CNT : Mute OFF, MIN : Mute ON, MAX : Mute OFF
- VOL 20······No change for CNT, MIN and MAX. The VOL 20 setting is maintained.
- VOL 30······No change for CNT, MIN and MAX. The VOL 30 setting is maintained.
- VOL 40······No change for CNT, MIN and MAX. The VOL 40 setting is maintained.

Note: Use a picture or tone whose changes can be easily recognized. Be careful when checking VOL 40 with a high - level sound input.


Remote control unit
POWER
MUTE
TV/VIDEO
CC MODE
C1/C2
F1/F2
BACK-GROUND
SLEEP
DISPLAY
CHANNEL
VOLUME
MTS
1
2
3
R/B
CH RETURN
4
5
6
7
8
9
0
AV MEN
PICTURE
ADJUST
P INP
INPUT
MULTI
STILL
SWAP
SHIFT
STROBE
CH SCAN
PIONEER
PROJECTION MONITOR RECEIVER
REMOTE CONTROL UNIT
SRS
Screen (Telop is red color.)
ADJUSTMENT
RANGE
CNT ⇨ MIN
MAX
Changes cyclically.

Numeric button of the remote control	Screen telop	Control function
①···················	Unindication	···Detail and Balance
②···················	Unindication	···Contrast and Treble
③···················	Unindication	···Bright and Bass
④···················	Unindication	···Color and Tint
⑤···················	Unindication	···Sharpness and Mute
⑥···················	CONVR	···Convergence
⑦···················	VOL 20	···Volume level 20
⑧···················	VOL 30	···Volume level 30
⑨···················	VOL 40	···Volume level 40

Press one of the numeric buttons on the remote control repeatedly.

The sound does not change by repeatedly pressing the numeric buttons.
The respective VOL settings are maintained.

Each time the PICTURE button is pressed, the control items are cyclically selected in the sequence indicated by the arrows.

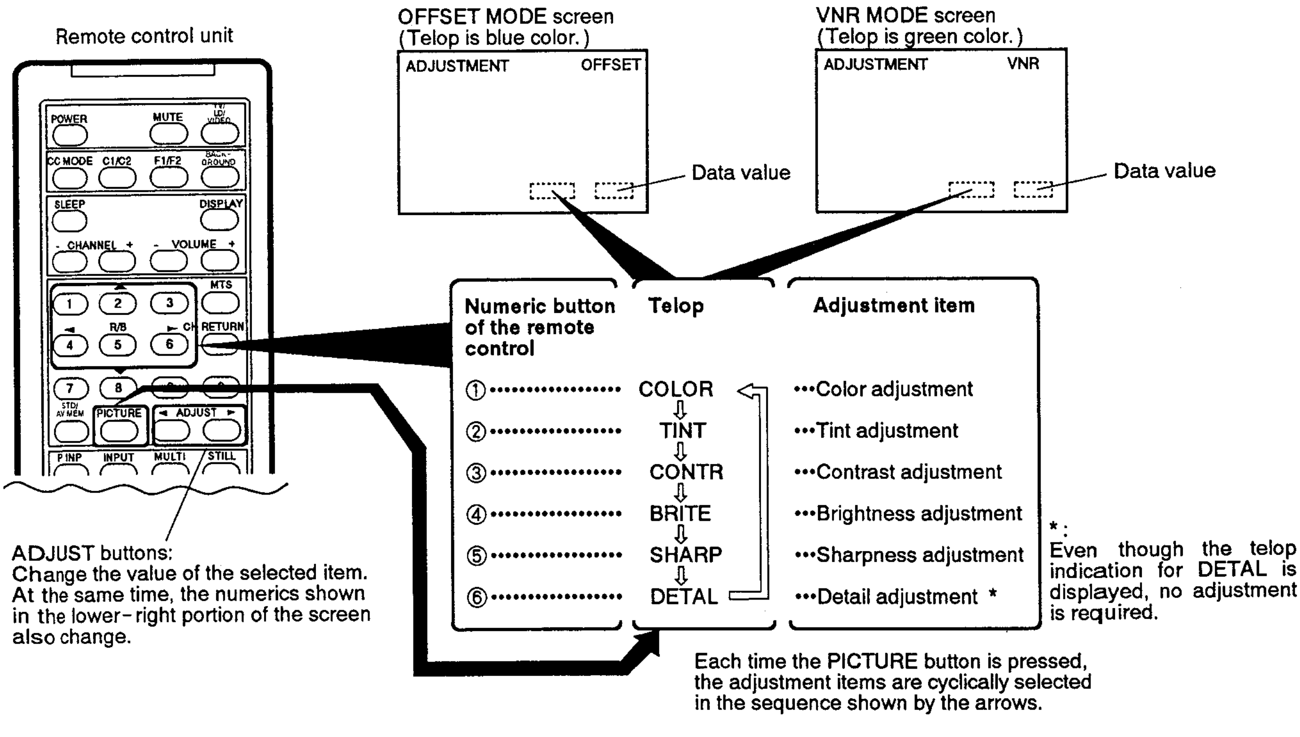
Fig. 8 - 2 Hierarchy of RANGE mode

8.1.4 OFFSET Mode
(PIONNER Standard Setting Mode)

In OFFSET mode, the picture quality, meaning PIONEER standard (STD) picture to be obtained when the STD/AV MEM button on the remote control unit is pressed, can be stored in a nonvolatile memory (IC452).
Fig 8-3 shows the hierarchy of OFFSET mode. The adjustment items are selected using the numeric buttons or the PICTURE button on the remote control and the selected item is adjusted using the ADJUST buttons. When the value of the selected item is changed, the numerics displayed in the lower-right portion of the screen also change accordingly, which will be stored in the nonvolatile memory.
Make the adjustments as described herein.

8.1.5 CONVER Mode

See 9. CONVERGENCE ADJUSTMENT.


Remote control unit
POWER
MUTE
TV/LD/VIDEO
CC MODE
C1/C2
F1/F2
BACK-GROUND
SLEEP
DISPLAY
- CHANNEL +
- VOLUME +
MTS
1
2
3
R/B
CH
RETURN
4
5
6
7
8
STD/AV MEM
PICTURE
◄ ADJUST ►
P INP
INPUT
MULTI
STILL
OFFSET MODE screen
(Telop is blue color.)
ADJUSTMENT
OFFSET
Data value
VNR MODE screen
(Telop is green color.)
ADJUSTMENT
VNR
Data value

ADJUST buttons:
Change the value of the selected item.
At the same time, the numerics shown in the lower-right portion of the screen also change.

Numeric button of the remote control	Telop	Adjustment item
①	COLOR	···Color adjustment
②	TINT	···Tint adjustment
③	CONTR	···Contrast adjustment
④	BRITE	···Brightness adjustment
⑤	SHARP	···Sharpness adjustment
⑥	DETAL	···Detail adjustment *

*: Even though the telop indication for DETAL is displayed, no adjustment is required.

Each time the PICTURE button is pressed, the adjustment items are cyclically selected in the sequence shown by the arrows.

Fig. 8-3 OFFSET mode

8.2 WHEN POWER SUPPLY ASSEMBLY IS REPAIRED

Note: VR151 and VR152 are protected by the shield covers so that they can not be adjusted. Do not try to turn these volumes by removing their shield cover. (Otherwise, the sensitivity of the protection circuit against the X-ray and the anode voltage will be affected.)

- Adjustment test points are located in the POWER SUPPLY assembly.

8.2.1 Power supply section

Step No.	Adjustment Item	Input Signal	Adjustment Point	Adjustment Procedure
1	135V power supply adjustment	Black burst signal	VR101(S)	Adjust the voltage of both sides of C136 to 135V ± 1V.

● Each output voltages check

After performed +135V adjustment, confirm the each voltage as follows.

Measuring Point	Voltage	Measuring Point	Voltage
Connector E6 +12V STB for P GND	+12V ± 4V	Connector E6 +9V for GND	+10V ± 3V
Connector E6 +25V for GND	+25V ± 5V	Connector E6 +25V for A GND	+25V ± 3V
Connector E6 −25V for GND	−25V ± 5V	Connector E5 H.T.+ for H.T. −	+6.25V ± 0.25V
Connector E7 +13.5V for GND	+13.5V ± 0.5V		

8.2.2 Deflection section

Step No.	Adjustment Item	Input Signal	Adjustment Point	Adjustment Procedure
1	Convergence confirmation	Cross hatch signal	——	Confirm the convergence. If the convergence is shifted, adjust as described in section 9. CONVERGENCE ADJUSTMENT.
2	Focus adjustment		Focus VR (VR)	Optimize the focus of each CRT assembly. It is recommend for easier adjustment to shift the color to be adjusted by the user-convergence control.
3	Horizontal size adjustment	Monoscope signal	VR154(S)	Adjust the screen size for the following values. When adjusting with ordinary broadcasting, adjust so that the screen does not blacken. •Horizontal Right: 95 ± 2%, Left: 94 ± 2% •Vertical Upper: 90.0 ± 3%, Lower: 91.0 ± 3%
4	Vertical size adjustment		VR181(S)	
5	White balance confirmation	Free signal	——	Confirm the white balance. If the best picture is not obtained, adjust as described in section 8.4.2.

8.3 WHEN POWER SUPPLY ASSEMBLY IS REPLACED

Note: VR151 and VR152 are protected by the shield covers so that they can not be adjusted. Do not try to turn these volumes by removing their shield cover. (Otherwise, the sensitivity of the protection circuit against the X-ray and the anode voltage will be affected.)

8.3.1 Power supply section

- No adjustment required.

8.3.2 Deflection section

- Perform this adjustment as described in section 8.2.2.

8.4 WHEN TUNER-VIDEO ASSEMBLY IS REPAIRED OR REPLACED

*a: The adjustment items with this indication are stored in IC452 (nonvolatile memory). When replacing the TUNER - VIDEO assembly, perform the following operations.

① Remove IC452 from both the old and new TUNER - VIDEO assemblies.

② Attach IC452 which was removed from the old TUNER - VIDEO assembly to the new TUNER - VIDEO assembly.

③ Fine-adjust the items marked with *a, referring to the tables.

④ Confirm the user settings.

Note: IC452 is quite sensitive to static electricity. Be careful when handling the IC.

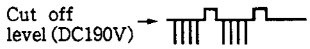
If data in IC452 have been erased, set the adjustment items marked with marked *a according to the descriptions in the tables and perform the user settings.

8.4.1 Convergence Section

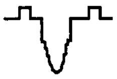
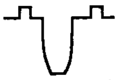
Step No.	Adjustment Item	Input Signal	Adjustment Point	Adjustment Procedure
1	Convergence adjustment *a	Cross hatch signal	Remote control	Adjust the red and blue convergence as described in section 9. CONVERGENCE ADJUSTMENT.

8.4.2 Video Section

- For the FACTORY ADJ mode, refer to the section 8.1.
- Perform this adjustment after the section 8.4.1.

Step No.	Adjustment Item		Input Signal	Adjustment Point	Adjustment Procedure
1	White balance adjustment		Color bar signal without color signal	Screen VR (R),(B) (VR1) VR252(R), VR251(B) Drive VR (V)	Adjust the screen VRs (R) and (B) until grey color can just be seen in the color of dark area. (Do not move the green VR at this stage.) Using the drive VR, adjust the color of bright area to white.
2	ADJUST-MENT OFFSET mode (PIONEER Standard setting) *1 *a	Set to the OFFSET mode (PIONEER standard setting mode) of FACTORY ADJ mode. (After adjustment is complete, release the normal condition.)			
3		Brightness adjustment	Cross hatch signal	COLOR	Minimize Color by remote control.
4				BRITE	Adjust the cut off level at TP-GK of G. CRT DRIVE assembly to DC190V. (After adjustment, confirm the white balance.)  (After this adjustment, adjust color as described in step No. 3).
5		Sharpness adjustment	Free signal	SHARP	Set the data value of telop to − 30.

*1: After this adjustment, confirm the TINT of the PINP sub picture. (TINT ought to be not shifted.) If it's shifted, adjust the TINT of the sub picture as described in 8.6.

Step No.	Adjustment Item		Input Signal	Adjustment Point	Adjustment Procedure
6	ADJUSTMENT OFFSET mode (PIONEER Standard setting) *1 *a	Color adjustment	Color bar	COLOR	Adjust screen to optimum condition.
7		Tint adjustment		TINT	Adjust screen to optimum condition.
8		Contrast adjustment	Free signal	CONTR	Adjust screen to optimum condition.
9				—	At the TP-BK of B. CRT DRIVE assembly, confirm that the signal is shaped as shown below.  Shapely waveform  Shapeless waveform
10	Confirm the white balance and picture quality.				

*1: After this adjustment, confirm the TINT of the PINP sub picture. (TINT ought to be not shifted.) If it's shifted, adjust the TINT of the sub picture as described in 8.6.

8.4.3 Control Section

- Perform this adjustment after the sections 8.4.1 and 8.4.2.

Step No.	Adjustment Item	Input Signal	Adjustment Point	Adjustment Procedure
1	User convergence confirmation *a	Free signal	——	Generate test cross signal, and confirm the user convergence. If there is any deviation, adjust according to the operating instructions.
2	Telop position adjustment		TC401(V)	Adjust the test cross to the center position.
3	Repeat steps 1 and 2 to obtained best position.			

8.4.4 Tuner Section

- No adjustment required when replacing the assembly.
- Perform the adjustment after the video and control section adjustments.
- Connection diagram is refered to Fig. 8-4.
- Adjustment points and test points are shown in Fig. 8-7.
- Perform the adjustment set to the TEST mode (Note 1).
- Perform the adjustment by using the channel 9 unless otherwise noted.
- Video and audio input signals are described in the below.

  Ⓝ ; No signal

  Video signal

  V① ; fv=EIA color bar, 60dBμV

  Audio signal (STEREO);

  dbx noise reduction ON, PRE-EMPHASIS ON

  S① ; f_A=300Hz, 30% MOD,

  L ch (or R ch) only, 54dBμV

Note 1;

How to set the TEST mode.

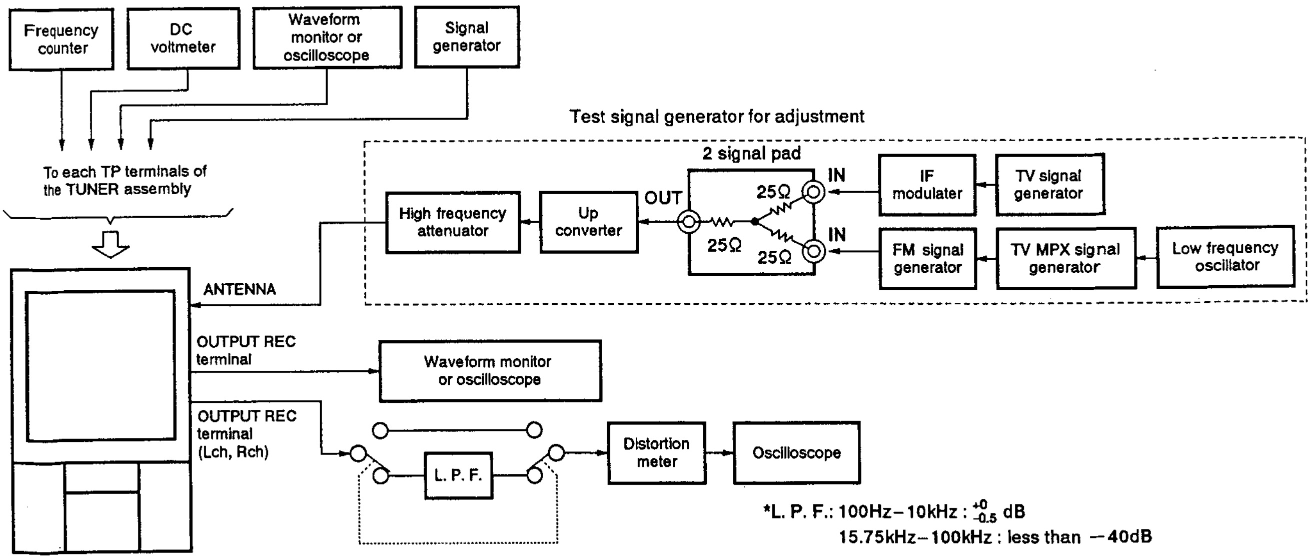
- Short-circuit TP-TEST and GND in the TUNER-VIDEO assembly.
- Disconnect the AC power cord from the AC outlet, then connect it again.

How to release the TEST mode.

- Release the short-circuit TP-TEST and GND in the TUNER-VIDEO assembly.
- Disconnect the AC power cord from the AC outlet, then connect it again.

Audio System

Step No.	Adjustment Item	Input Signal		Adjustment Point	Adjustment Procedure
		Video	Audio		
1	dbx filter adjustment	Ⓝ	Ⓝ	VR354 (V)	Input the signal of 22.9kHz/245mV to TP-COMP, and adjust TP-FILTER ADJ output to minimum.
2	VCO adjustment	Ⓝ	Ⓝ	——	Measure the DC voltage of TP-MPX. VCO with no input signal.
3		Ⓝ	Ⓝ	VR353 (V)	Input the signal of 15.734kHz/48mV to TP-COMP, and adjust the DC voltage of TP-MPX. VCO to the voltage measured in step 2.
4	Separation adjustment	V①	S①	VR351 (V)	Adjust the output of the OUTPUT REC terminal on the rear panel to minimum level. (Adjust the R ch level becomes minimum at the Lch input and the L ch level becomes minimum at the R ch input.)


Frequency counter
DC voltmeter
Waveform monitor or oscilloscope
Signal generator
To each TP terminals of the TUNER assembly
Test signal generator for adjustment
2 signal pad
OUT
IN
IN
25Ω
25Ω
25Ω
High frequency attenuator
Up converter
IF modulater
TV signal generator
FM signal generator
TV MPX signal generator
Low frequency oscillator
ANTENNA
OUTPUT REC terminal
Waveform monitor or oscilloscope
OUTPUT REC terminal (Lch, Rch)
L. P. F.
Distortion meter
Oscilloscope
PROJECTION MONITOR RECEIVER

*L. P. F.: 100Hz-10kHz : $^{+0}_{-0.5}$ dB
15.75kHz-100kHz : less than −40dB

Fig. 8-4 Connection diagram when adjusting the tuner section

8.5 WHEN CONVERGENCE ASSEMBLY IS REPAIRED OR REPLACED

- Red and blue lines may deviate only slightly while green lines may deviate greatly.
- Adjust as described in section 9. CONVERGENCE ADJUSTMENT.

8.6 WHEN AV I/O-P IN P-Y/C SEP ASSEMBLY IS REPAIRED OR REPLACED

Step No.	Adjustment Item	Input Signal	Adjustment Point	Adjustment Procedure
1	TINT adjustment of Sub-picture	Color bar (Main and Sub-picture)	VR701 (A)	TINT of the Sub-picture ought not to shift. If it is shifted, adjust as follows. Set to P in P picture on the screen, and adjust the TINT of the Sub-picture so that it becomes the same as that of the Main-picture.

8.7 WHEN R, G, OR B CRT DRIVE ASSEMBLY IS REPAIRED OR REPLACED

- White balance ought to be obtained best picture.
  If not, adjust the white balance as follows.

Step No.	Adjustment Item	Input Signal	Adjustment Point	Adjustment Procedure
1	White balance adjustment	Ordinary broadcasting	Screen (VR1) (R) (B)	Adjust the white if proper adjustment cannot be achived as follows. Set the COLOR by the remote control to minimum, adjust the screen VRs to obtain best picture.

atch the new
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the other two

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ı the color
en replaced.

:- and V-
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d CRT

on yoke in the
:s converge.

nbly to
:nce position
return it to
; completed.)

' an assembly
NT for details
olor

te control.

grey can be

ıe color of
ssembly G is
ınd (B).)

only when
:ssfully effec-

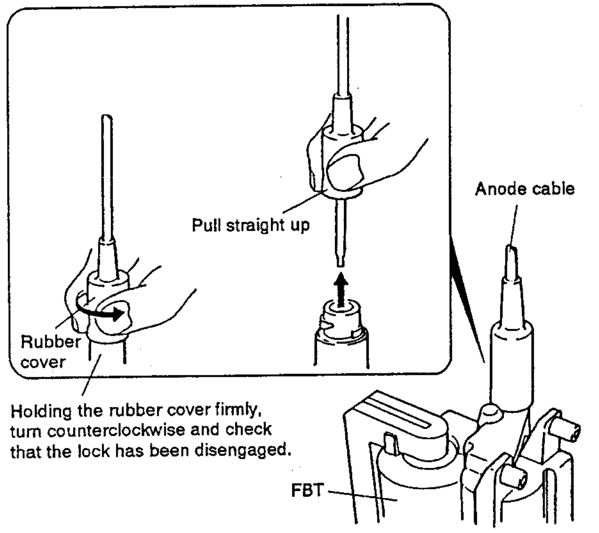
8.11 ANODE VOLTAGE MEASURING METHOD

Disconnect the FBT anode cable as outlined in Fig. 8-5. Measure at the point where the cable enters the FBT.

Caution: Take extra precaution when measuring this high voltage. High voltages are also present in surrounding circuit boards (CRT DRIVE assembly, POWER SUPPLY assembly).

> **SERVICEMAN WARNING**
>
> Before removing the anode cable, turn off the power, unplug the AC plug and let the unit discharge for more than 1 minute.

Note: Determine the extent of the rubber cover before disconnecting the cable.


Pull straight up
Anode cable
Rubber cover
FBT

Holding the rubber cover firmly, turn counterclockwise and check that the lock has been disengaged.

Note: When reconnecting the cable, proceed in the reverse order. After reconnecting, tug on the cable to check that it is secure.

Fig. 8-5 Disconnecting the anode cable

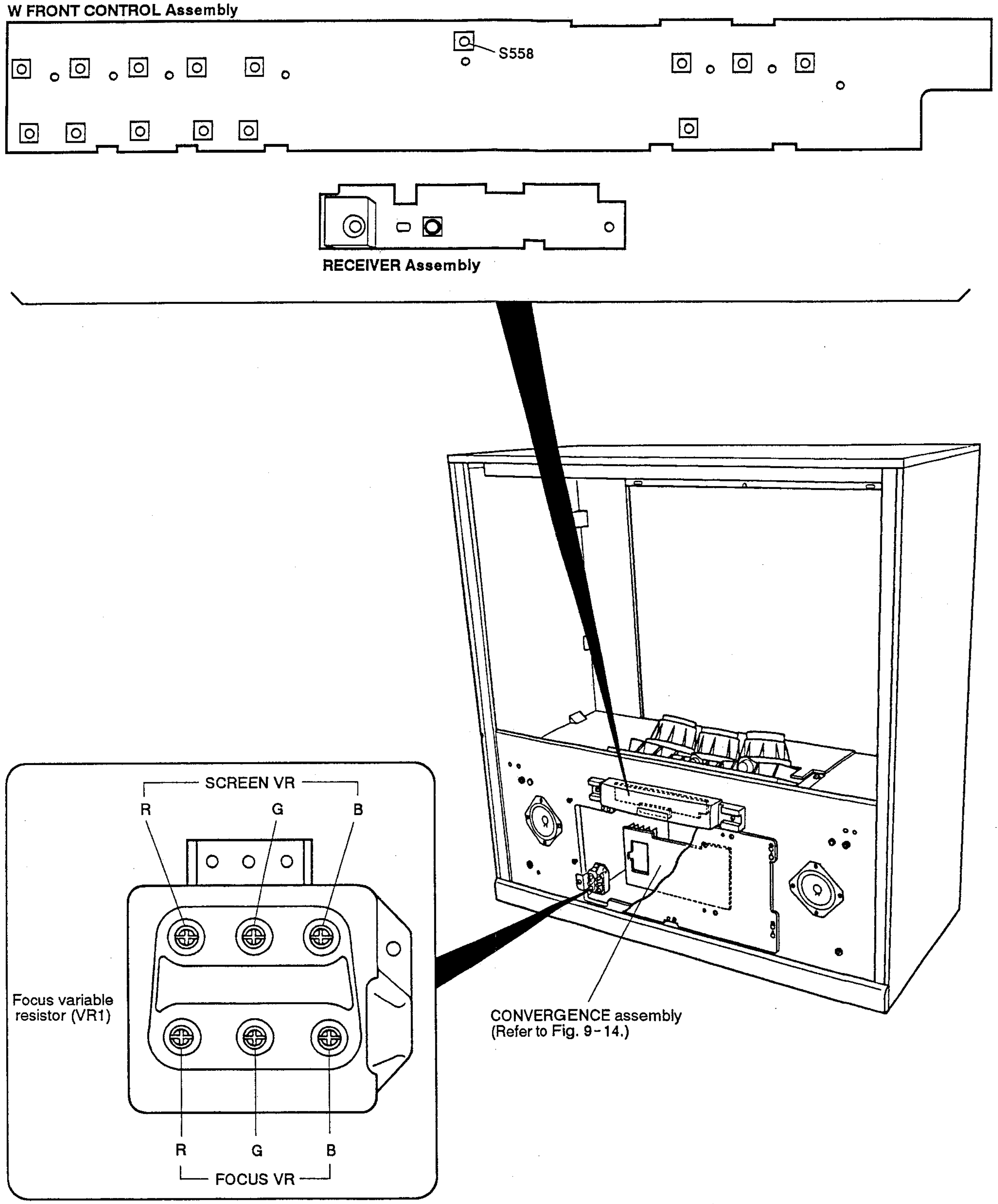

W FRONT CONTROL Assembly
S558
RECEIVER Assembly
SCREEN VR
R
G
B
Focus variable resistor (VR1)
R
G
B
FOCUS VR
CONVERGENCE assembly
(Refer to Fig. 9-14.)

Fig. 8-6 Adjustment point (1)

8.8 WHEN CRT ASSEMBLY R, G, OR B IS REPLACED

- For replacing the CRT assembly, refer to section 10. REPLACING THE CRT ASSEMBLY.
- When one or two tubes are replaced, match the new tubes with the remaining tube. If all three tubes are replaced, first adjust G, and then match the other two tubes with the G tube.

Step No.	Adjustment Item	Input Signal	Adjustment Point	Adjustment Procedure
1	Deflection yoke angle and centering adjustment	Cross signal (or generate a test cross signal for user convergence adjustment.)	Centering magnet of deflection yoke of replaced CRT assembly (Refer to Fig. 8-8.)	Adjust the deflection yoke angle until the color cross of the replaced CRT assembly is parallel with the color cross of a CRT assembly which has not been replaced.
				Reset the convergence STATIC (Set the H- and V-STATIC values to 0 in CONVER ADJ mode of FACTORY ADJ mode.) when the replaced CRT assembly is red or blue.
				Adjust the centering magnet of the deflection yoke in the replaced CRT assembly until cross becomes converge.
2	Focus adjustment	Cross hatch	Replaced color focus VR (VR1) and lens assembly connected to replaced CRT assembly (Refer to 8.12 ON FOCUS ADJUSTMENT WITH THE LENS ASSEMBLY.)	Adjust the focus of the replaced CRT assembly to optimum condition. (Shifting the convergence position may provide easier observation. Be sure to return it to the original position after the adjustment is completed.)
3	Convergence adjustment		Match the color convergence of the replaced CRT assembly with the color of an assembly which has not been replaced. See Section 9. CONVERGENCE ADJUSTMENT for details on the matching procedure. (When CRT assembly G is replaced, match the color convergence of the R, G and B.)	
4	White balance	Color bar signal without color signal	Screen VR(VR1) VR252 (R) } Drive VR(V) VR251 (B) }	Set the picture quality to standard by remote control.
				Adjust the replaced color screen VR until grey can be seen in the color of dark area.
				Adjust the replaced color drive VR until the color of bright area becomes white. [When CRT assembly G is replaced, slightly adjust the drive VR (R) and (B).]
				Adjust the PIONEER Standard Brightness only when the above adjustments have not been successfully effectuated due to the abnormal brightness.
5	PIONEER standard settings	Adjust as described in steps 2 thru 10 in Section 8.4.2. Also make the VNR settings according to 8.4.2 when required.		

8.9 WHEN LENS ASSEMBLY IS REPLACED

- Remove the lenticular sheet, and attach tracing paper with a plastic tape, etc. instead. (Refer to 8.12 ON FOCUS ADJUSTMENT WITH THE LENS ASSEMBLY.) Adjust the focus of the lens assembly newly mounted, by observing the picture shown on the tracing paper.

8.10 WHEN OTHER ASSEMBLIES ARE REPAIRED OR REPLACED

- No adjustment required.

8.11 ANODE VOLTAGE MEASURING METHOD

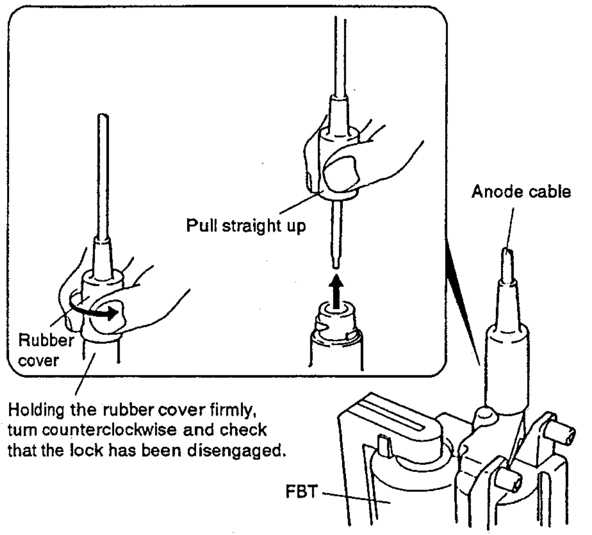
Disconnect the FBT anode cable as outlined in Fig. 8-5. Measure at the point where the cable enters the FBT.

Caution: Take extra precaution when measuring this high voltage. High voltages are also present in surrounding circuit boards (CRT DRIVE assembly, POWER SUPPLY assembly).

SERVICEMAN WARNING

Before removing the anode cable, turn off the power, unplug the AC plug and let the unit discharge for more than 1 minute.

Note:Determine the extent of the rubber cover before disconnecting the cable.



Holding the rubber cover firmly, turn counterclockwise and check that the lock has been disengaged.

Note :When reconnecting the cable, proceed in the reverse order. After reconnecting, tug on the cable to check that it is secure.

Fig. 8-5 Disconnecting the anode cable

W FRONT (
Focus vari
resistor (V

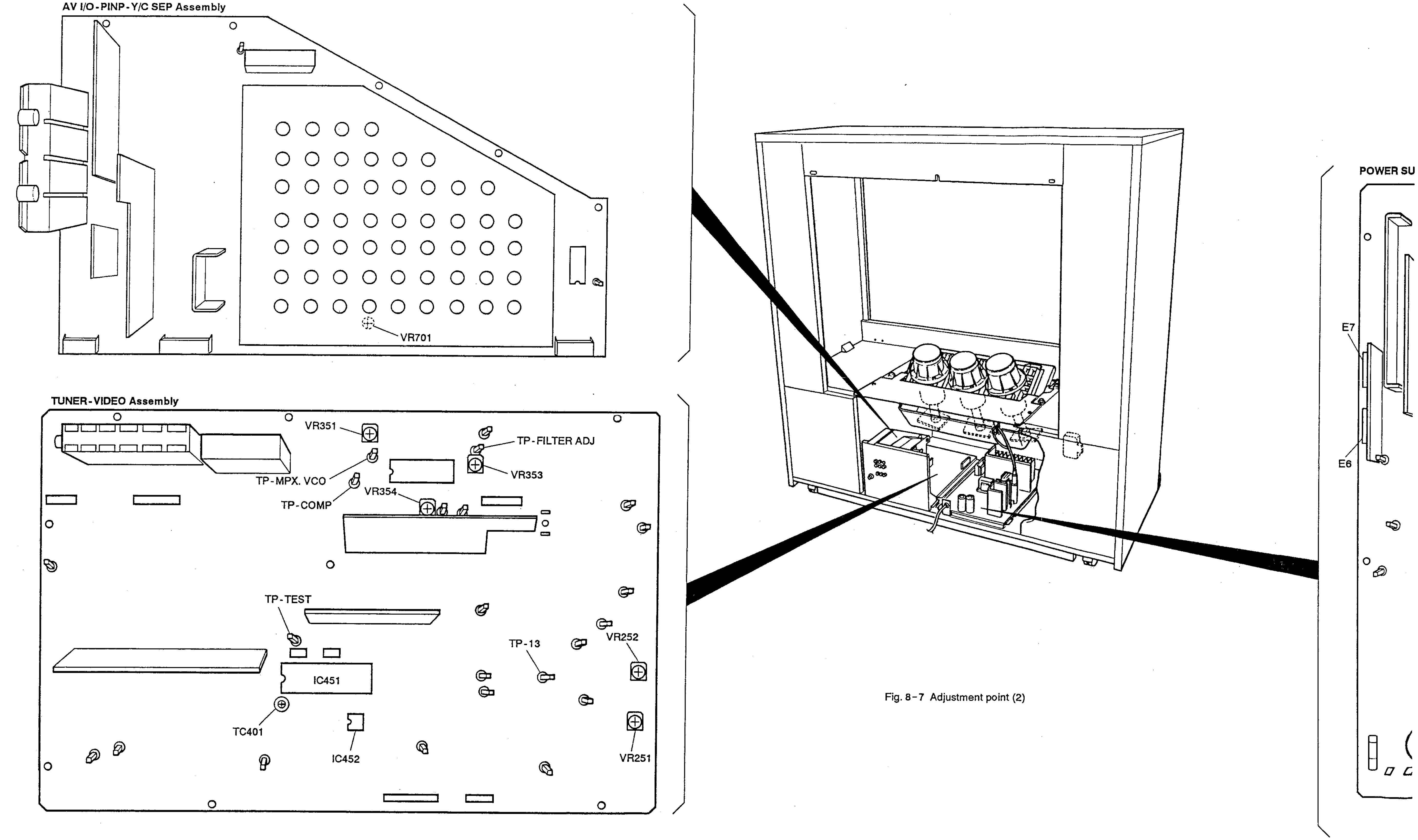
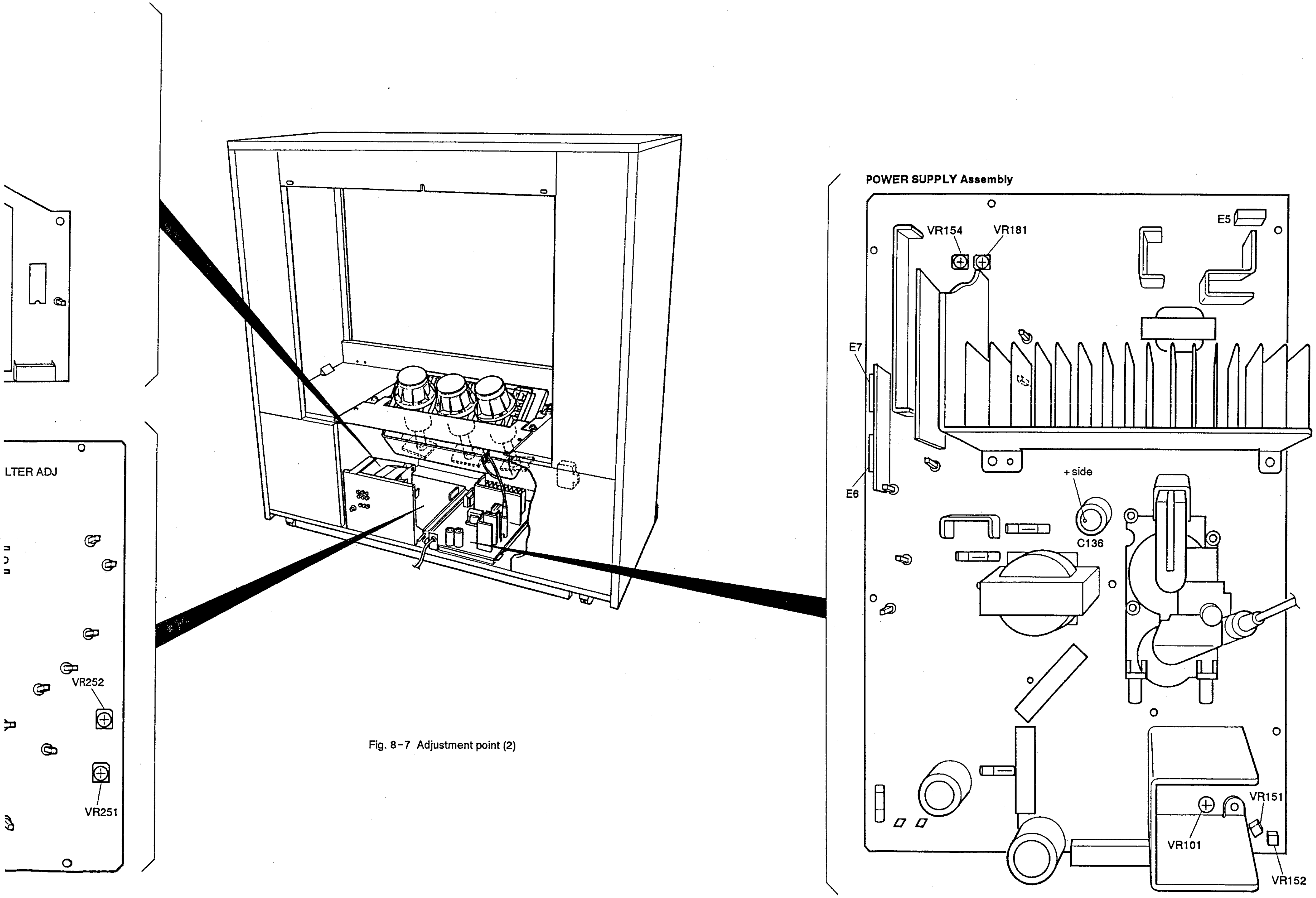

AV I/O-PINP-Y/C SEP Assembly
VR701
TUNER-VIDEO Assembly
VR351
TP-FILTER ADJ
TP-MPX. VCO
VR353
TP-COMP
VR354
TP-TEST
TP-13
VR252
IC451
TC401
IC452
VR251
POWER SU
E7
E6

Fig. 8-7 Adjustment point (2)



POWER SUPPLY Assembly

LTER ADJ
VR252
VR251
VR154
VR181
E5
E7
E6
+side
C136
VR151
VR101
VR152

Fig. 8-7 Adjustment point (2)

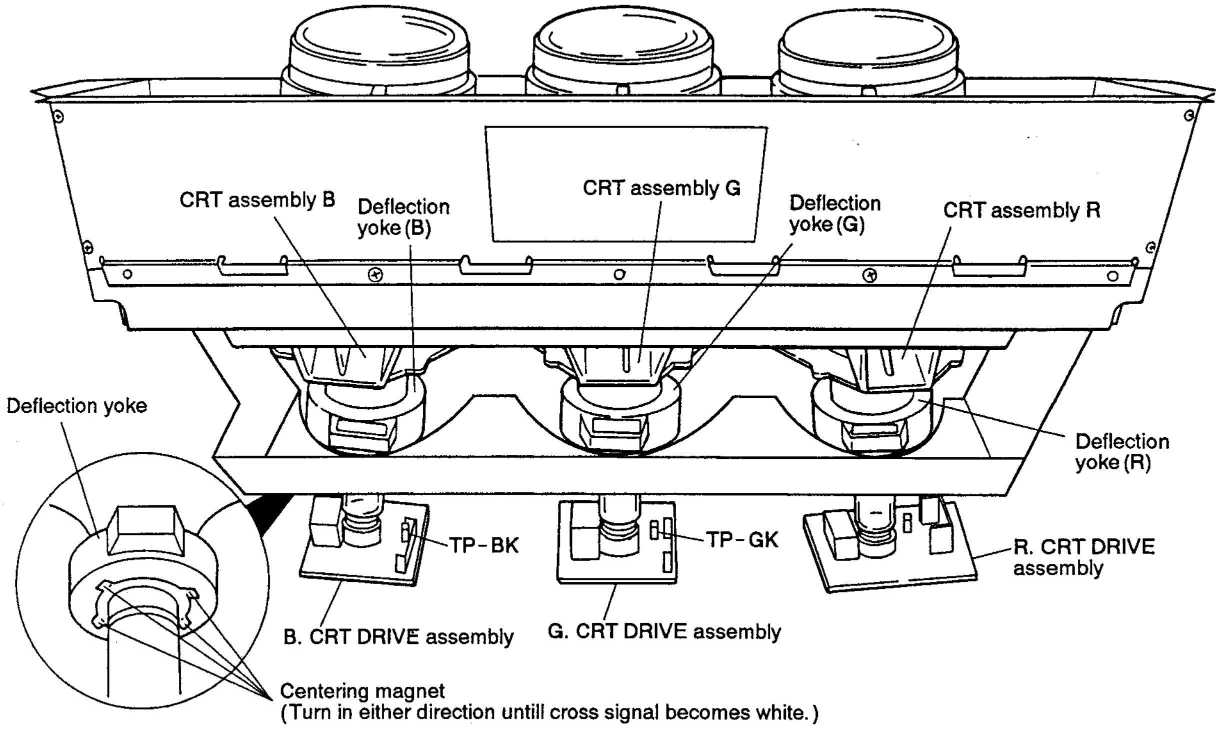

CRT assembly B
Deflection yoke (B)
CRT assembly G
Deflection yoke (G)
CRT assembly R
Deflection yoke
Deflection yoke (R)
TP-BK
TP-GK
R. CRT DRIVE assembly
B. CRT DRIVE assembly
G. CRT DRIVE assembly
Centering magnet
(Turn in either direction untill cross signal becomes white.)

Fig. 8−8 Adjustment point (3)

8.12 ON FOCUS ADJUSTMENT WITH THE LENS ASSEMBLY

Attach a sheet of translucent paper, such as tracing paper, while inserting spacers having the thickness as shown in Fig.8 - 9 to align it with the regular position of the screen surface. Use spacers which provide the same thickness at both the right and left sides. Turn the lens assembly of the color to be adjusted for the optimum focus setting.

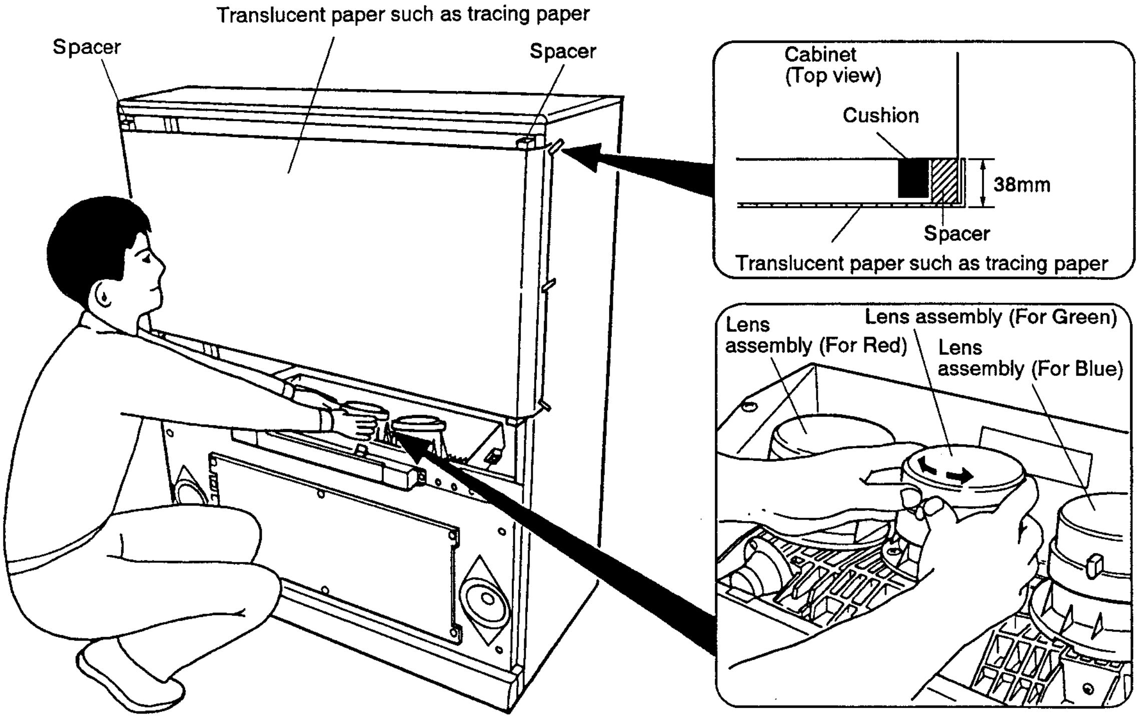

Translucent paper such as tracing paper
Spacer
Spacer
Cabinet
(Top view)
Cushion
38mm
Spacer
Translucent paper such as tracing paper
Lens assembly (For Red)
Lens assembly (For Green)
Lens assembly (For Blue)

Fig. 8-9 Adjustment point (4)

9.2 PICTURE MOVEMENTS IN HORIZONTAL ADJUSTMENTS

The adjustments in the horizontal direction are performed by applying the convergence correction signals to the horizontal deflection and changing the amount of the correction. With these adjustments, the vertical lines will move.

This section describes the picture movements and the adjusting points when adjusting each item using a cross-hatch signal input.

See Fig. 9-6 for reference, in which each of the sections to the right and left to the center vertical line of the screen are divided into three blocks to describe the picture movements.

9.2.1 Center-line adjustment in the Horizontal Direction

See Table 9-2 for the picture movements and general information on this adjustment.

This adjustment consists of H-SKEW, H-BOW, H-4TH BOW and H-STATIC to correct the overall picture.

Adjust the center vertical line so that it is not distorted and is straight and perfectly vertical.

The center vertical line does not move when adjusting the other items. Use the center vertical line set through this adjustment as reference for the other adjustments. After adjusting the center line, adjust the screen sections to the right and left of the center line.

Note that there may be some deviation in the overall picture if this adjustment is performed alone. Finely adjust the picture with subsequent adjustments.

> **Caution**
>
> Be sure to adjust H-STATIC by changing the data value within the range (010 to -010) of the telop indication in CONVER ADJ mode of FACTORY ADJ mode. If this range is exceeded, the convergence assembly may be damaged. If the adjustment is not possible within the range of 010 to -010, set the data value to 0, turn the centering magnet of the deflection yoke and fine-adjust H-STATIC.

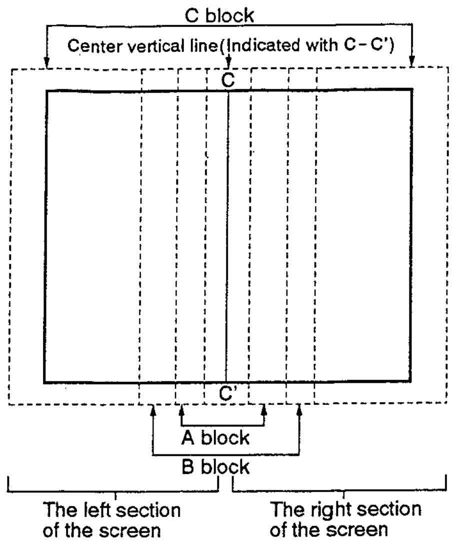
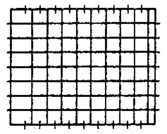
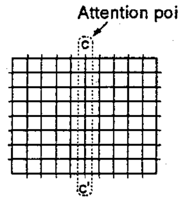
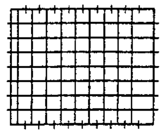
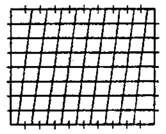
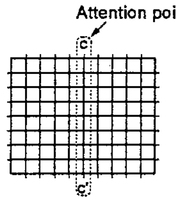
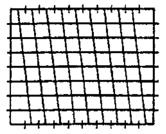
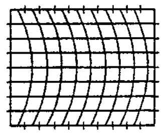
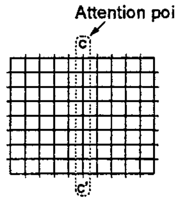
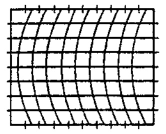
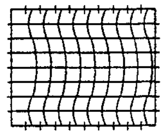
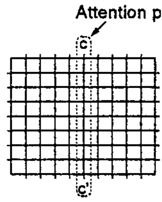
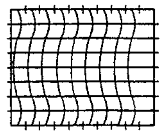

C block
Center vertical line(Indicated with C-C')
C
C'
A block
B block
The left section of the screen
The right section of the screen

Fig. 9-6 Screen Divisions for Horizontal Adjustment

Table 9-2 Center-line Adjustment in the Horizontal Direction

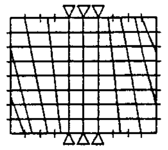
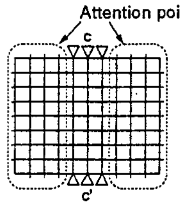
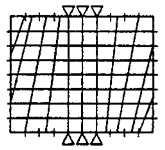
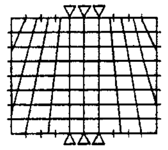
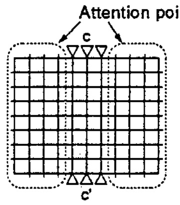
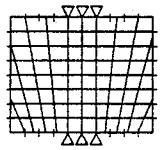
Item	Numeric Button of the Remote Control Unit	Deviating Picture	Corrected Picture	Deviating Picture	Attention Point on the Screen During Adjustment	Adjustment Point		Remarks
H-STATIC *1	⓪				Center vertical line	Move the vertical line at the attention point on the screen shown in the figure to the left to converge it in the green line which has been set for reference. This provides the reference position of the center vertical line for the convergence adjustment.		The overall picture moves in parallel in the same manner as with the user-convergence adjustment.
H-SKEW	①				Center vertical line	Eliminate the lean at the attention point on the screen shown in the figure to the left.	Adjust H-SKEW, H-BOW, H-4TH BOW repeatedly until the center vertical line is straight and is perfectly vertical. Adjust H-SKEW and H-4TH BOW so that the A blocks are in the optimal condition. (The lean and waving distortion in the A blocks cannot be eliminated with the other adjustments.)	The lean of the overall picture is corrected. As shown in the figure to the left, the overall picture is leaned.
H-BOW	②				Center vertical line	Adjust so that the bowed line at the attention point on the screen shown in the figure to the left is straight.		The bowed lines over the overall screen are corrected. All the vertical lines are bowed as shown in the figure to the left.
H-4TH BOW					Center vertical line	Adjust so that the wavy line in the attention-point on the screen shown in the figure to the left is straight.		The waving (fourth-order) distortion over the overall screen is corrected. As shown in the figure to the left, the whole picture is distorted in waves.

*1 : H-STATIC can be shifted for convenience while adjusting the other items. Be sure to adjust the other items in consideration of the shift in H-STATIC and then readjust H-STATIC. (Be sure to shift it within the telop indication range of 010 to -010.)

9.2.2 Lean Adjustment in the Horizontal Direction

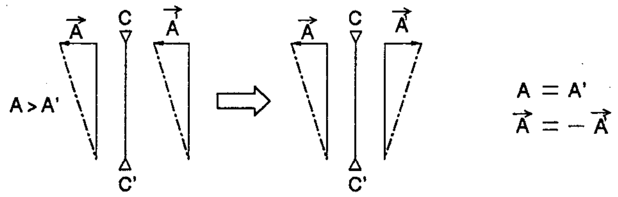
See Table 9-3 for the picture movements and general information on this adjustment.
The right and left sections of the screen are corrected with H-SUB KEY and H-KEY. Adjust the lean in the B and C blocks on the screen to eliminate.

Table 9-3 Lean adjustment in the Horizontal direction

Item	Numeric Button of the Remote Control Unit	Deviating Picture	Corrected Picture Screen	Deviating Picture	Attention Point on the Screen During Adjustment	Adjustment Point		Remarks
H-SUB KEY *1	③		⇔  ⇔		B and C blocks	Adjust to eliminate any lean at the attention-point blocks on the screen shown in the figure to the left. If the lean cannot be eliminated, set the screen to the status in which H-KEY has deviation as shown in Fig. 9-7, and adjust H-KEY.	Alternately adjust H-SUB KEY and H-KEY so that the lean in the B and C blocks is eliminated.	The lean in the B and C blocks on the screen is corrected. The right and left sections of the screen move in the same direction.
H-KEY	④		⇔  ⇔		B and C blocks	Adjust to eliminate the lean in the attention-point blocks on the screen shown in the figure to the left.		The lean in the the B and C blocks on the screen is corrected. The right and left sections move symmetrically in relation to the center line.

*1 : H-SUB-KEY substantially differs from that of the previous-year model SD-P4053-K in picture movement and attention points.

Note:
▷————◁ :Line which does not move.



Note:
C ▷————◁ C' : Center vertical line
———— : Reference line
-·-·-·-·- : Leaned line

$\vec{A}$:Vector of the deviation in the left section of the screen
$\vec{A}$:Vector of the deviation in the right section of the screen
A :Scalar quantity of the deviation in the left section of the screen
A' :Scalar quantity of the deviation in the right section of the screen

Fig. 9-7 Example of H-SUB KEY

9. CONVERGENCE ADJUSTMENT

This model provides a large-sized picture by projecting the images reproduced on the tubes onto a flat screen through the respective lenses. A convergence adjustment is required to eliminate distortions on the screen which may be caused by such a projection system.

In the convergence adjustment, the saw-tooth, parabola, third-order, fourth-order, fifth-order and sixth-order waves supplied from IC601 and IC602 (PA0053A) are used as the correction signals.

For green, the correction signals are combined and the amounts of the correction are adjusted with volume controls provided in the convergence assembly as usual.

For red and blue, these correction signals are combined by IC603 and IC604 (PM0002A) in the convergence assembly and the amounts of the correction are adjusted with the electronic volume controls in IC603 and IC604. Those amounts data are stored in a nonvolatile memory (IC452) in the TUNER - VIDEO assembly.

Table 9 - 1 shows the items of the convergence adjustment required for this model. These items, including SKEW and BOW etc., are roughly put into four categories, the center-line adjustment, lean adjustment, distortion adjustment and line-interval adjustment. Each item must be adjusted for vertical and horizontal and for green, red and blue, individually. The picture movements in adjustment differ between the directions but are the same among the colors. For the picture movements in adjustment, see the descriptions in 9.2 and 9.3.

As the CRT assembly G (green) is arranged in the center for this model, the distortion of green is the smallest, and the adjustment for green consists of only 6 items (GH - KEY, GH - PIN, etc.), as shown in Table 9 - 1.

First adjust green and then red and blue in the specified sequence so that the red and blue lines are converged into the green lines.

Adjustment of red consists of 16 items (RH - SKEW, RH - BOW, etc.) in the horizontal direction and 14 items (RV - SKEW, RV-BOW, etc.) in the vertical direction. Adjustment of blue consists of the same items as those for red.

Table 9 - 1 Convergence Adjustment Items

Category	Item	Abbreviation *1	Green - Horizontal (GH)	Green - Vertical (GV)	Red - Horizontal (RH)	Red - Vertical (RV)	Blue - Horizontal (BH)	Blue - Vertical (BV)
Center-line adjustment	Skew	SKEW	×	○ (VR651)	○	○	○	○
	Bow	BOW	×	○ (VR652)	○	○	○	○
	4th-order Bow	4TH BOW	×	×	○	×	○	×
	Static	STATIC	×	×	○	○	○	○
Lean adjustment	Sub Keystone	SUB KEY	×	×	○	○	○	○
	Keystorne	KEY	○ (VR656)	○ (VR653)	○	○	○	○
	Mid Keystorne	MID KEY	×	×	×	○	×	○
Distortion adjustment	Sub Pin	SUB PIN	×	×	○	○	○	○
	Mid Sub Pin	M S PIN	×	×	○	×	○	×
	4th-order Sub Pin	4 S PIN	×	×	○	×	○	×
	S-curve Pin	S C PIN	×	×	×	○	×	○
	Pin	PIN	○ (VR655)	○ (VR654)	○	○	○	○
	Mid Pin	MID PIN	×	×	○	○	○	○
	4th-order Pin	4TH PIN	×	×	○	○	○	○
Line-interval adjustment	Linearity	LIN	×	×	○	○	○	○
	4th-order Linearity	4TH LIN	×	×	○	×	○	×
	Size	SIZE	×	×	○	○	○	○
	Sub Linearity	SUB LIN	×	×	○	○	○	○

*1 : The abbreviations are shown as a telop display in FACTORY ADJ mode (for red and blue only).

Note: The symbol "○" in the table means that the adjustment of the corresponding item is required.
Use the volume controls in the convergence assembly shown in parentheses when specified for that item.
The other items are adjusted in FACTORY ADJ mode.
The symbol " × " means that the adjustment of the corresponding item is not required.

9.1 FACTORY ADJ MODE

When adjusting the convergence, use of another remote control unit having separate INPUT SELECTOR keys for LD, TV and VIDEO 1, such as AXD1277 (CU-SD062) supplied with the SD-P5065-K, in addition to the supplied remote control unit will improve the operability.

As previously mentioned, the corrected amounts of red and blue lines are stored in a nonvolatile memory (IC452) of the TUNER-VIDEO assembly. Thus, each time the convergence is adjusted, data on the corrected amounts must be newly stored in the memory. CONVER mode in FACTORY ADJ mode is provided for this operation.

CONVER mode consists of manufacturing CONVER ADJ mode and CONVER ADJ mode. Manufacturing CONVER ADJ mode is used only in the manufacturing process. For service adjustments, CONVER ADJ mode must be used.

For the adjustment of green, the volume controls are provided in the convergence assembly, which enable the adjustment regardless whether CONVER mode of FACTORY ADJ mode is activated or not. However, the adjustment may be easier with a function provided in CONVER mode to erase the colors independently (see STEP 3).

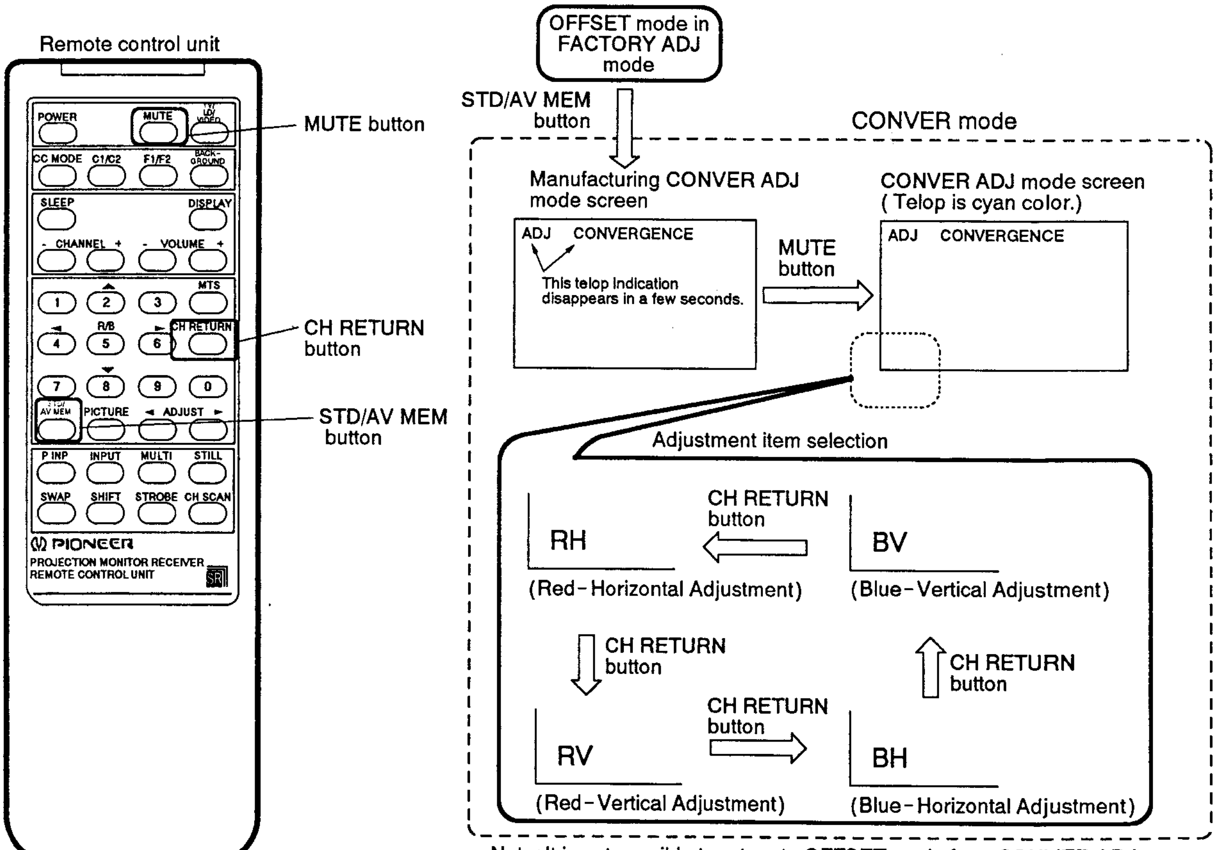
Follow the operating procedure described below to use CONVER mode.

[STEP 1]

Fig. 9-1 shows how to enter CONVER mode. To activate CONVER mode, press the STD/AV MEM button on the remote control in OFFSET mode of FACTORY ADJ mode. When CONVER mode is initiated, the unit enters manufacturing CONVER ADJ mode. Press the MUTE button to change it to CONVER ADJ mode.

[STEP 2]

In CONVER ADJ mode, first select the color to be adjusted along with the direction (RH, RV, BH or BV). See Fig. 9-1 for the selection procedure which uses the CH RETURN button on the remote control. Green can be adjusted regardless of the selection in this step.


Remote control unit
POWER
MUTE
TV/LD/VIDEO
CC MODE
C1/C2
F1/F2
BACK-GROUND
SLEEP
DISPLAY
- CHANNEL +
- VOLUME +
MTS
1
2
3
R/B
CH RETURN
4
5
6
7
8
9
0
STD/AV MEM
PICTURE
◄ ADJUST ►
P INP
INPUT
MULTI
STILL
SWAP
SHIFT
STROBE
CH SCAN
PIONEER
PROJECTION MONITOR RECEIVER
REMOTE CONTROL UNIT
MUTE button
CH RETURN button
STD/AV MEM button
OFFSET mode in FACTORY ADJ mode
STD/AV MEM button
CONVER mode
Manufacturing CONVER ADJ mode screen
ADJ CONVERGENCE
This telop indication disappears in a few seconds.
MUTE button
CONVER ADJ mode screen (Telop is cyan color.)
ADJ CONVERGENCE
Adjustment item selection
RH
(Red-Horizontal Adjustment)
CH RETURN button
BV
(Blue-Vertical Adjustment)
CH RETURN button
CH RETURN button
RV
(Red-Vertical Adjustment)
CH RETURN button
BH
(Blue-Horizontal Adjustment)

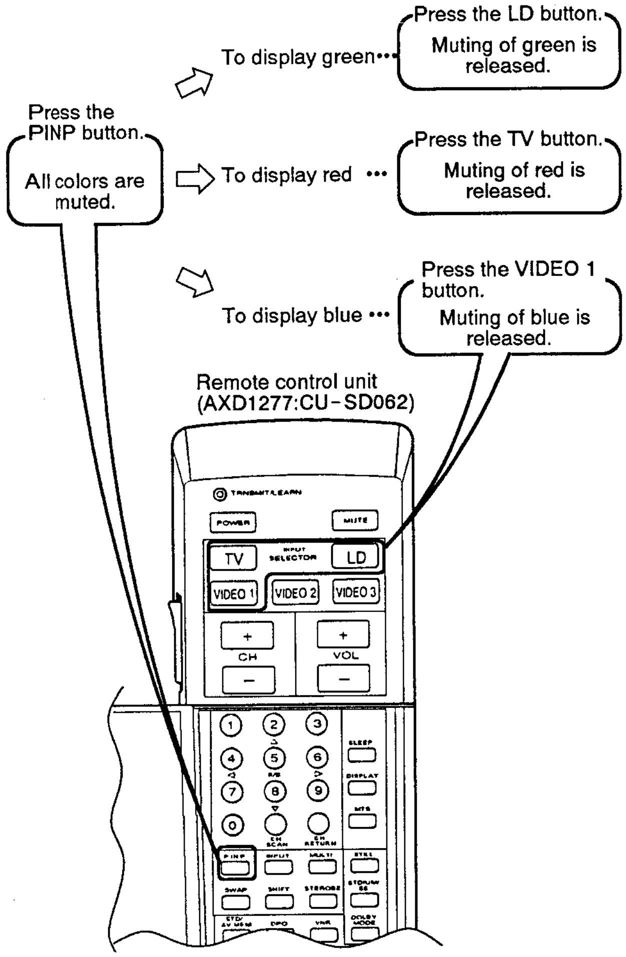
Note: It is not possible to return to OFFSET mode from CONVER ADJ mode. When CONVER ADJ mode is deactivated, FACTORY ADJ mode is deactivated by pressing S558 in the front.

Fig. 9-1 Hierarchy of CONVER Mode

[STEP 3]

Select the color to be muted. Fig. 9 - 2 shows the selection procedure. Normally, mute red and blue when adjusting green, mute blue when adjusting red, and mute red when adjusting blue.

Note: This function cannot be operated with the remote control unit AXD1357 (CU - SD077).
When adjusting, use the remote control unit AXD1277 (CU - SD062) supplied with the SD - P5065 - K or block the lights from the CRTs of the unnecessary colors by covering the CRTs (lens assemblies) other than that to be adjusted using a piece of cardboard or equivalent, In this case, be careful not to damage the surface of the lens assemblies, or shift red or blue lines by moving H - and V - STATIC in CONVER ADJ mode within the telop indication range (010 to - 010).


Press the PINP button.
All colors are muted.
To display green•••
Press the LD button.
Muting of green is released.
To display red •••
Press the TV button.
Muting of red is released.
To display blue •••
Press the VIDEO 1 button.
Muting of blue is released.
Remote control unit (AXD1277:CU - SD062)
POWER
MUTE
TV
INPUT SELECTOR
LD
VIDEO 1
VIDEO 2
VIDEO 3
CH
VOL
1
2
3
4
5
6
7
8
9
0
SLEEP
DISPLAY
PINP

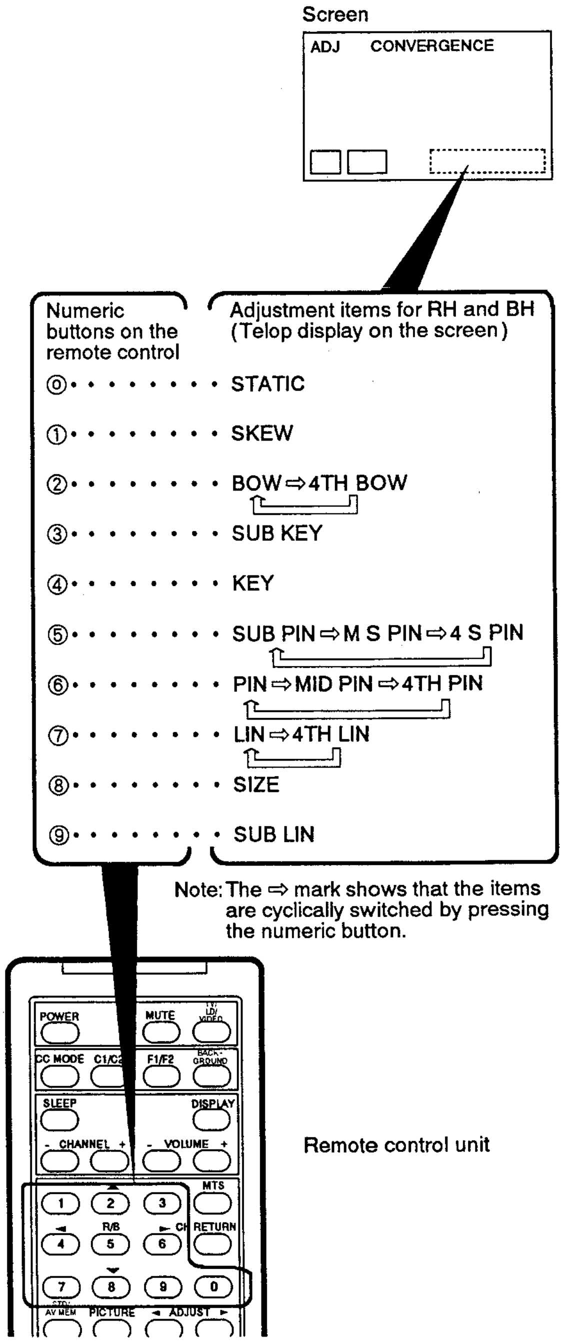
Note: Once muting of a color is released, that color cannot be muted unless the P IN P button is pressed to mute all colors simultaneously.

Fig. 9 - 2 Color Muting

[STEP 4]

Select the adjustment items for red or blue using the numeric buttons on the remote control. The items differ for the horizontal and vertical directions. The items which are specified for the numeric buttons in the horizontal and vertical directions are shown in Fig. 9 - 3 and Fig. 9 - 4, respectively.

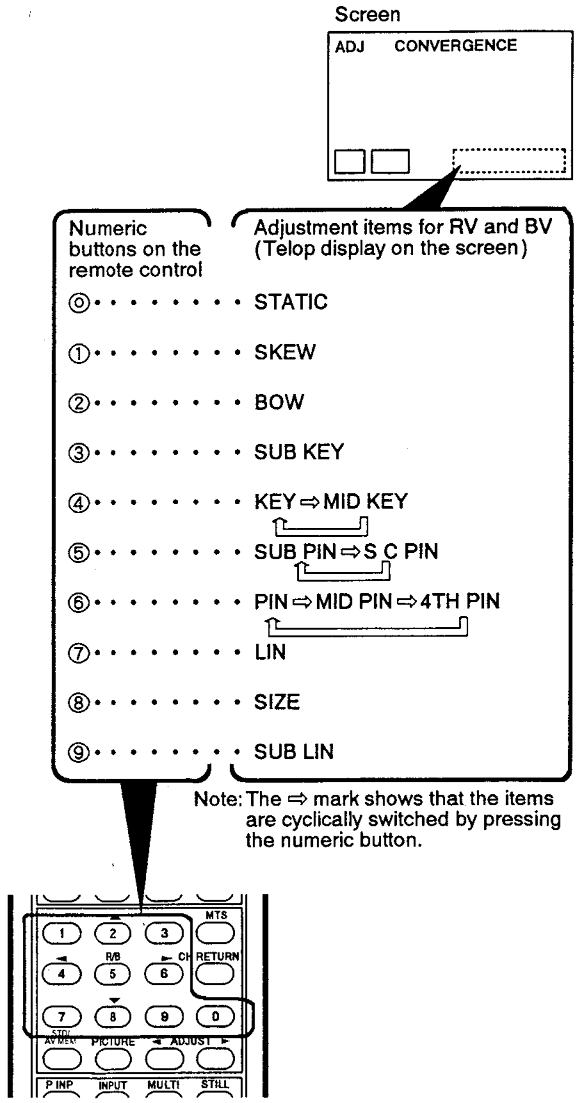
This step can be skipped when adjusting green.


Screen
ADJ CONVERGENCE
Remote control unit
POWER
MUTE
TV/LD/VIDEO
CC MODE
C1/C2
F1/F2
BACK-GROUND
SLEEP
DISPLAY
- CHANNEL +
- VOLUME +
MTS
R/B
CH
RETURN
STD/AV MEM
PICTURE
◄ ADJUST ►

Numeric buttons on the remote control	Adjustment items for RH and BH (Telop display on the screen)
⓪	STATIC
①	SKEW
②	BOW ⇨ 4TH BOW
③	SUB KEY
④	KEY
⑤	SUB PIN ⇨ M S PIN ⇨ 4 S PIN
⑥	PIN ⇨ MID PIN ⇨ 4TH PIN
⑦	LIN ⇨ 4TH LIN
⑧	SIZE
⑨	SUB LIN

Note: The ⇨ mark shows that the items are cyclically switched by pressing the numeric button.

Fig. 9 - 3 Adjustment Items for RH and BH


Screen
ADJ CONVERGENCE
MTS
R/B
CH
RETURN
STD/AV MEM
PICTURE
◄ ADJUST ►
P INP
INPUT
MULTI
STILL

Numeric buttons on the remote control	Adjustment items for RV and BV (Telop display on the screen)
⓪	STATIC
①	SKEW
②	BOW
③	SUB KEY
④	KEY ⇨ MID KEY
⑤	SUB PIN ⇨ S C PIN
⑥	PIN ⇨ MID PIN ⇨ 4TH PIN
⑦	LIN
⑧	SIZE
⑨	SUB LIN

Note: The ⇨ mark shows that the items are cyclically switched by pressing the numeric button.

Fig. 9-4 Adjustment Items for RV and BV

[STEP 5]
By pressing the ADJUST buttons on the remote control (see Fig. 9 - 5 - 1) after selecting an adjustment item for red or blue, the picture on the screen moves. Use these buttons and perform the adjustment by following the procedures described in the sections that follow.
For the picture movements, see 9.2 and 9.3.
When the picture moves, the numeric data (Variable range : 127 to -128 *1) in the telop display also change (see Fig,9-5-2), which will be stored in a nonvolatile memory.
For the adjustment of green, the volume controls in the convergence assembly are used. For details, see 9.5.

*1: Be sure to adjust H- and V- STATIC by changing the data value within the range (010 to - 010) of the telop indication. If this range is exceeded, the convergence assembly may be damaged.

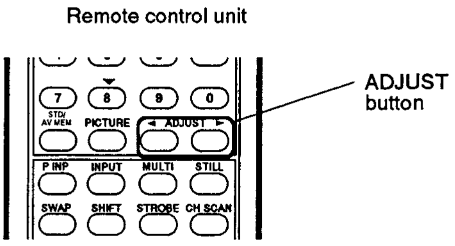

Remote control unit
ADJUST button
7
8
9
0
STD/AV MEM
PICTURE
◄ ADJUST ►
P INP
INPUT
MULTI
STILL
SWAP
SHIFT
STROBE
CH SCAN

Fig. 9-5-1 ADJUST button

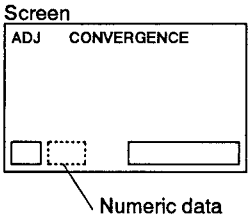

Screen
ADJ CONVERGENCE
Numeric data

Fig. 9-5-2 CONVER ADJ mode screen

[STEP 6]
When the adjustment of an item of RH, RV, BH or BV is finished, first select the next color to be adjusted and direction (horizontal/vertical) and then continue the adjustment by performing the subsequent steps.

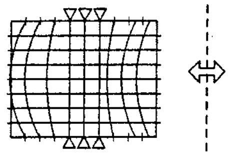
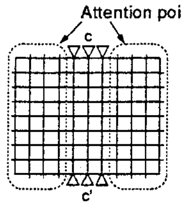
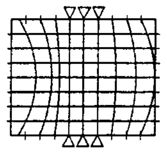
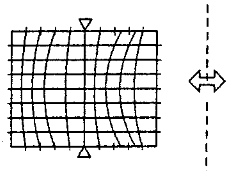
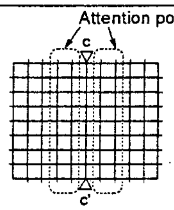
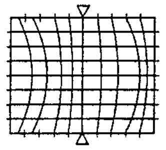
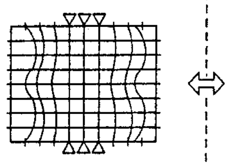
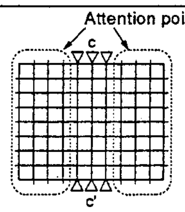
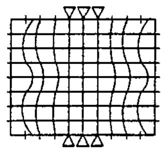
When the entire convergence adjustment is completed, display all three colors and perform fine adjustment. Then press S558 (the FACTORY ADJ mode ON/OFF switch) on the front panel to release FACTORY ADJ mode. Note that it is not possible to switch from CONVER ADJ mode to the other modes of FACTORY ADJ mode. CONVER ADJ mode cannot be deactivated without releasing FACTORY ADJ mode.

Note: When reactivating FACTORY ADJ mode, turn power off and turn it on again.

9.2.3 Distortion Adjustment in the Horizontal Direction (1)

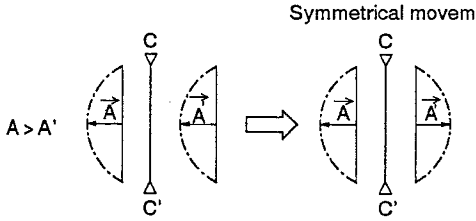
See Table 9-4 for the picture movements and general information on this adjustment.
In this adjustment, the distortion on the screen is corrected with H-M S PIN, H-SUB PIN and H-4 S PIN while moving the right and left sections in the same direction.
Adjust them so that the distortion in the right and left sections is eliminated and the vertical lines in both sections are straight. If straight lines cannot be obtained, first set the picture to the status in which it is symmetrically distorted and then adjust H-MID PIN, H-PIN and H-4TH PIN.

Table 9-4 Distortion Adjustment in the Horizontal Direction (1)

Item	Numeric Button of the Remote Control Unit	Deviating Picture	Corrected Picture	Deviating Picture	Attention Point on the Screen During Adjustment	Adjustment Point		Remarks
H-SUB PIN *1	⑤	 ⇔	 ⇔		B and C blocks (Especially C block)	Adjust so that any bowed lines in the attention-point blocks on the screen shown in the figure to the left are straight.	First adjust the A block with H-M S PIN and set the B block to a roughly-adjusted state. Then adjust the B and C blocks with H-SUB PIN. If the B and C blocks are distorted in waves, adjust H-4 S PIN. Repeat these adjustments until the vertical lines in both the left and right sections of the screen are straight. If straight lines cannot be obtained, move the right and left sections symmetrically as shown in Fig. 9-8 in the opposite directions to the same extent and adjust H-MID PIN, H-PIN and H-4TH PIN.	The bowed lines are corrected centering the C block on the screen. As shown in the figure to the left, the lines in the C block move more than those in the B block. The lines in the right and left sections move in the same direction.
H-M S PIN *1		 ⇔	 ⇔		A and B blocks (Especially B block)	Adjust so that any bowed lines in the attention-point blocks on the screen shown in the figure to the left are straight.		The bowed lines are corrected centering the B block on the screen. As shown in the figure to the left, the B block move more than the C block. The right and left sections move in the same direction.
H-4 S PIN		 ⇔	 ⇔		B and C blocks	Adjust so that any wavy lines in the attention-point blocks on the screen shown in the figure to the left are straight.		The wavy lines (fourth-order) are corrected in the B and C blocks on the screen. The right and left sections move in the same direction.

*1 : H-SUB PIN and H-M S PIN work relative to each other. Be sure to adjust them alternately.

Note:
▷——◁ : Line which does not move.



Note:
C▷——◁C' : Center vertical line
—— : Reference line
------- : Distorted line

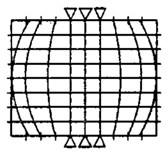
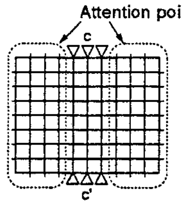
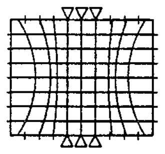
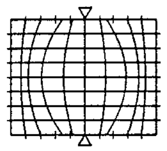
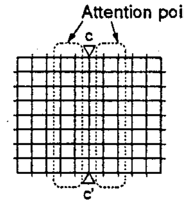
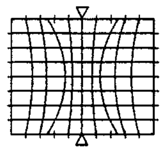
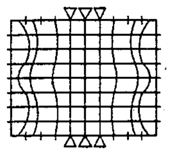
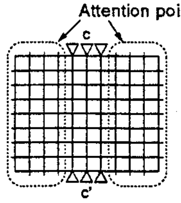
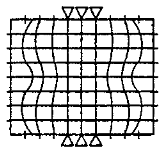
$\vec{A}$: Vector of the deviation in the left section of the screen
$\vec{A'}$: Vector of the deviation in the right section of the screen
A : Scalar quantity of the deviation in the left section of the screen
A' : Scalar quantity of the deviation in the right section of the screen

Fig. 9-8 Example of Distortion Adjustment in the Horizontal Direction (1)

9.2.4 Distortion Adjustment in the Horizontal Direction (2)

See Table 9-5 for the picture movements and general information on this adjustment.
In this adjustment, the distortion on the screen is corrected with H-MID PIN, H-PIN and H-4TH PIN while moving the right and left sections of the screen symmetrically in relation to the center line. Adjust so that the distortion in the right and left sections is eliminated and the vertical lines in both sections are straight.

Table 9-5 Distortion Adjustment in the Horizontal Direction (2)

Item	Numeric Button of the Remote Control Unit	Deviating Picture	Corrected Picture	Deviating Picture	Attention Point on the Screen During Adjustment	Adjustment Point		Remarks
H-PIN *1	⑥	 ⇔	 ⇔		B and C blocks (Especially C block)	Adjust so that any bowed lines in the attention-point blocks on the screen shown in the figure to the left are straight.	First adjust the A blocks with H-MID PIN and set the B blocks to a roughly-adjusted state. Then adjust the B and C blocks with H-PIN. If there is waving distortion, adjust H-4TH PIN. Repeat these adjustments until the vertical lines in both the left and right sections of the screen are straight.	The bowed lines are corrected centering the C block on the screen. As shown in the figure to the left, the C block move more than the B block. And the right and left sections move symmetrically in relation to the center line.
H-MID PIN *1		 ⇔	 ⇔		A and B blocks (Especially B block)	Adjust so that any bowed lines in the attention-point blocks on the screen shown in the figure to the left are straight.		The bowed lines are corrected centering the B block on the screen. As shown in the figure to the left, the B block move more than the C block. And the right and left sections move symmetrically in relation to the center line.
H-4TH PIN		 ⇔	 ⇔		B and C blocks	Adjust so that any wavy lines in the attention-point blocks on the screen shown in the figure to the left are straight.		The wavy lines (fourth-order) are corrected in the B and C blocks on the screen. As shown in the figure to the left, and the right and left sections move symmetrically in relation to the center line.

*1 : H-PIN and H-MID PIN work relative to each other. Be sure to adjust them alternately.

Note:
▷————◁ : Line which does not move.

9.3 PICTURE MOVEMENTS IN VERTICAL ADJUSTMENTS

The adjustments in the vertical direction are performed by applying the convergence correction signals to the vertical deviation to change the amount of correction. With these adjustments, the horizontal lines will move.

This section describes the picture movements and the adjusting points when adjusting each item using a cross-hatch input.

See Fig. 9 - 10 for reference, in which each of the sections above and below the center horizontal line of the screen are divided into two blocks to describe the picture movements.

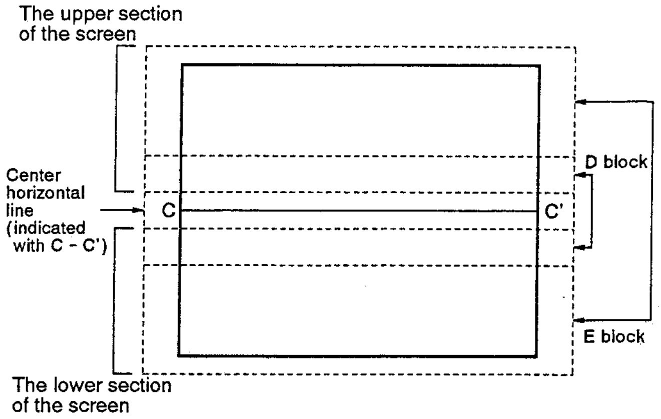

The upper section of the screen
Center horizontal line (indicated with C - C')
C
C'
D block
E block
The lower section of the screen

Fig. 9 - 10 Screen Divisions for Vertical Adjustments

9.3.1 Center - line Adjustment in the Vertical Direction

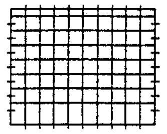
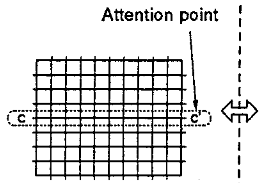
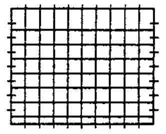
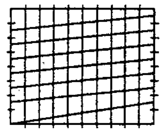
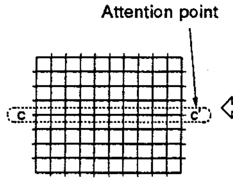
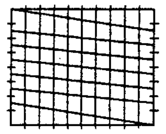
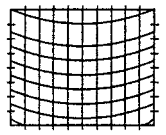
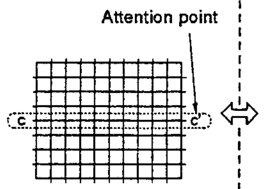
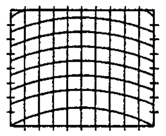
See Table 9 - 8 for the picture movements and general information on this adjustment.

This adjustment consists of V - SKEW, V - BOW and V - STATIC to correct the overall picture. Adjust the center horizontal line so that it is not distorted and is straight and perfectly horizontal. The center horizontal line does not move when adjusting the other items. Use the center horizontal line set through this adjustment as the reference for the other adjustments. After adjusting the center line, adjust the screen sections above and below the center line. Note that there may be some deviation in the overall picture if this adjustment is performed alone. Finely adjust the picture with subsequent adjustments.

Caution

Be sure to adjust V - STATIC by changing the data value within the range (010 to - 010) of the telop indication in CONVER ADJ mode of FACTORY ADJ mode.
If this range is exceeded, the convergence assembly may be damaged. If the adjustment is not possible within the range of 010 to - 010, set the data value to 0, turn the centering magnet of the deflection yoke and fine - adjust V - STATIC.

Table 9 - 8 Center - line Adjustment in the Vertical Direction

Item	Numeric Button of the Remote Control Unit	Deviating Picture	Corrected Picture	Deviating Picture	Attention Point on the Screen During Adjustment	Adjustment Point		Remarks
V - STATIC *1	⓪				Center horizontal line	Move the horizontal line at the attention point on the screen shown in the figure to the left to converge it in the green line which has been set for the reference. This provides the reference position of the center horizontal line for the convergence adjustment.		The overall picture moves in parallel in the same manner as with the user - convergence adjustment.
V - SKEW	①				Center horizontal line	Eliminate the lean at the attention point on the screen shown in the figure to the left.	Adjust V-SKEW and V-BOW repeatedly until the center horizontal line is straight and is perfectly horizontal. Be sure to set to the range in which the D blocks can be adjusted with V - MID KEY. (For the D blocks, the distortion cannot be independently adjusted and the lean is eliminated only with V - MID KEY.)	The lean of the overall picture is corrected. As shown in the figure to the left, the overall picture is leaned.
V - BOW	②				Center horizontal line	Adjust so that the bowed line at the attention point on the screen shown in the figure to the left is straight.		The bowed lines over the screen are corrected. All the horizontal lines are bowed as shown in the figure to the left.

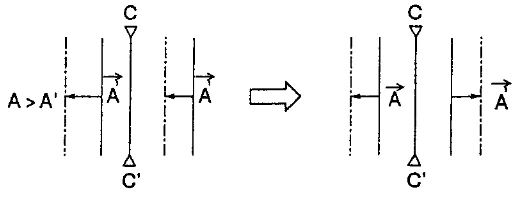
*1: V - STATIC can be shifted for convenience while adjusting the other items. Be sure to adjust the other items in consideration of the shift in V - STATIC and then readjust V - STATIC. (Be sure to shift it within the telop indication range of 010 to - 010.)

9.2.5 Line-Interval Adjustment in the Horizontal Direction

See Table 9 - 6 for the picture movements and general information on this adjustment.

In this adjustment, the intervals of the vertical lines are corrected with H-4TH LIN, H-LIN, H-SIZE and H-SUB LIN. Converge the vertical lines in the right and left sections of the screen in the green vertical lines which have been set for reference.

The differences between H-LIN, H-4TH LIN, H-SIZE and H-SUB LIN are shown in Table 9-7.



A = A'
$\vec{A} = -\vec{A}$

Note:
C▷————◁C' : Center vertical line
———— : Reference line
-·-·-·-·- : Deviating line

$\vec{A}$: Vector of the deviation in the left section of the screen
$\vec{A}$: Vector of the deviation in the right section of the screen
A : Scalar quantity of the deviation in the left section of the screen
A' : Scalar quantity of the deviation in the right section of the screen

Fig. 9-9 Example of Line-Interval Adjustment in the Horizontal Direction

Table. 9-7 Difference Between Adjustment Items

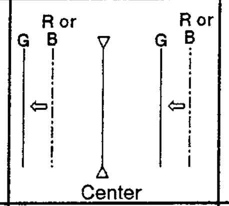
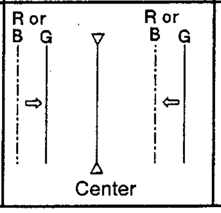
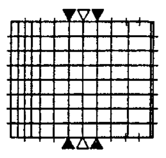
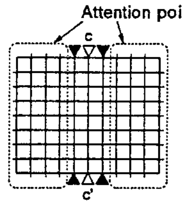
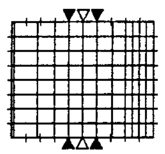
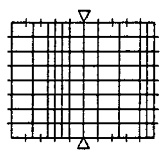
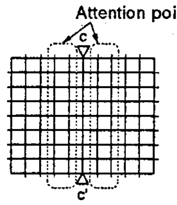
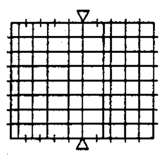
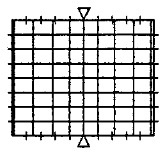
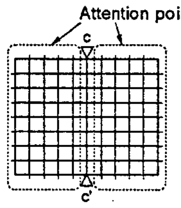
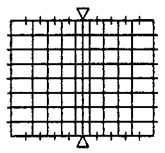
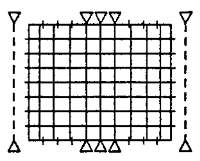
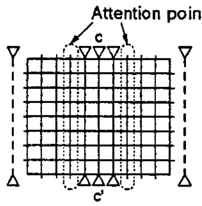
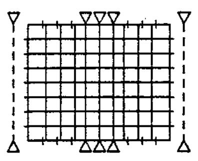
Item	Screen Example	Remarks
H-4TH LIN and H-LIN		H-4TH LIN and H-LIN should be adjusted when the right and left sections of the screen show deviation in the same direction.
H-SIZE and H-SUB LIN		H-SIZE and H-SUB LIN should be adjusted when the right and left sections of the screen show deviation symmetrically in relation to the center line.

Table 9-6 Line-Interval Adjustment in the Horizontal Direction

Item	Numeric Button of the Remote Control Unit	Deviating Picture	Corrected Picture	Deviating Picture	Attention Point on the Screen During Adjustment	Adjustment Point		Remarks
H-LIN *1	⑦				B and C blocks	Observe the movements with H-SIZE and H-SUB LIN and move the lines in the right and left sections in the opposite directions to the same extent. (See Fig. 9-9.)	First move the lines in the A blocks with H-4TH LIN and then those in the B and C blocks with H-LIN. Adjust them repeatedly until the optimum line intervals are obtained. *2	The line intervals are corrected centering the C block on the screen. As shown in the figure to the left, the lines in the right and left sections of the screen move centering the respective C block.
H-4 TH LIN *1					A and B blocks (Especially B block)	Observe the movements with H-SIZE and H-SUB LIN and move the lines in the right and left sections in the opposite directions to the same extent. (See Fig. 9-9.)		The line intervals are corrected centering the A and B blocks on the screen. As shown in the figure to the left, the lines in the right and left sections of the screen move centering the respective A and B block.
H-SIZE *2	⑧				A, B and C blocks	Converge the vertical lines in the green vertical lines which have been set for reference.	Adjust the vertical lines in the right and left sections of the screen with H-SIZE. If the lines cannot be converged in the B blocks, adjust H-SUB LIN.	The line intervals in the right and left sections (A, B and C blocks) of the screen are corrected. As shown in the figure to the left, the line intervals in the right and left sections of the screen change with the center line as the axis.
H-SUB LIN *2	⑨				B block	Converge the vertical lines in the attention-point blocks on the screen shown in the figure to the left in the green vertical lines which have been set for reference.		The line intervals in the B block on the screen are corrected. As shown in the figure to the left, the lines in the center of B block of the right and left sections move in the same manner as with H-SIZE.

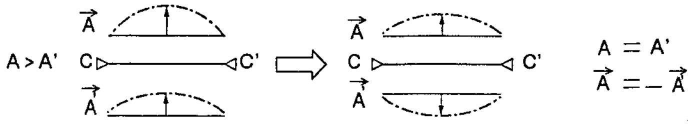
*1: H-4TH LIN and H-LIN work relative to each other. Be sure to adjust them alternately.

*2: When convergence in the green lines is achieved with H-4TH LIN and H-LIN, further adjustments with H-SIZE and H-SUB LIN are not necessary.

Note:
▷————◁ : Line which does not move at all.
▶————◀ : Line which hardly moves.
▷- - - - - - - -◁ : Line which does not move out of the screen.

9.3.3 Distortion Adjustment in the Vertical Direction

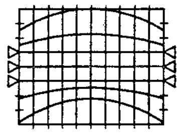
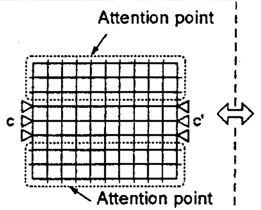
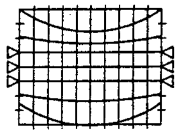
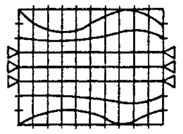
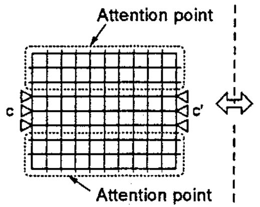
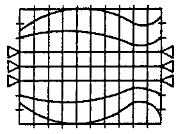
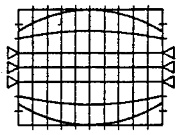
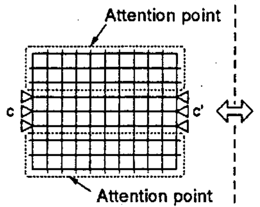
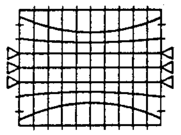
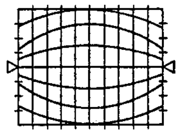
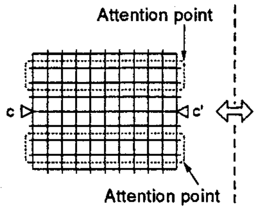
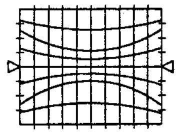
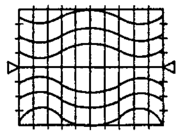
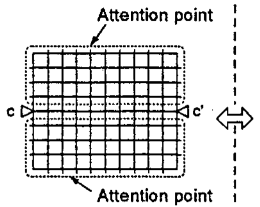
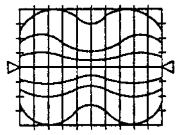
See Table 9-10 for the picture movements and general information on this adjustment.
In this adjustment, distortion on the screen is corrected. While adjusting V-SUB PIN, the upper and lower sections of the screen move in the same direction. While adjusting V-MID PIN, V-PIN, V-S C PIN and V-4TH PIN, the upper and lower sections move symmetrically in relation to the center line. Adjust them so that the distortion in the upper and lower sections of the screen is eliminated and the horizontal lines in both sections are straight.



Note:
C▷——◁C' : Center horizontal line
——— : Reference line
-·-·-·- : Distorted line
$\vec{A}$: Vector of the deviation in the upper section of the screen
$\vec{A'}$: Vector of the deviation in the lower section of the screen
A : Scalar quantity of the deviation in the upper section of the screen
A' : Scalar quantity of the deviation in the lower section of the screen

Fig. 9-12 Example of V-SUB PIN Adjustment

Table 9-10 Distortion Adjustment in the Vertical Direction

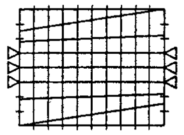
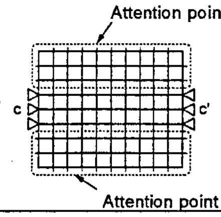
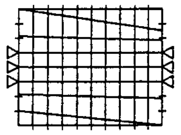
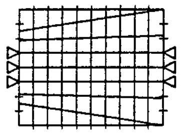
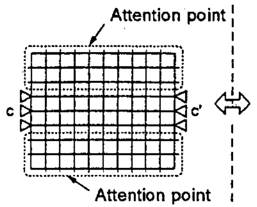
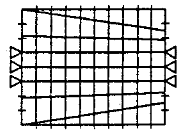
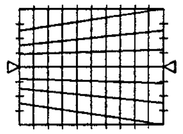
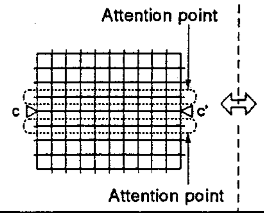
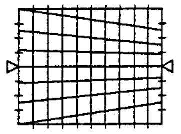
Item	Numeric Button of the Remote Unit	Deviating Picture	Corrected Picture	Deviating Picture	Attention Point on the Screen During Adjustment	Adjustment Point		Remarks
V-SUB PIN	⑤				E block	Adjust so that any bowed lines in the attention-point blocks on the screen shown in the figure to the left are straight. If straight lines cannot be obtained, move the upper and lower sections as shown in Fig. 9-12 in the opposite directions to the same extent from the center horizontal line. Adjust with V-PIN so that the lines are straight.		The bowed lines are corrected in the E block of the screen. As shown in the figure to the left, the upper and lower sections move in the opposite directions.
V-S C PIN					E block	Adjust so that any wavy lines in the attention-point blocks on the screen shown in the figure to the left are straight.	First adjust D block with V-MID PIN while setting the center-line side of E blocks to a roughly-adjusted state. Then adjust E block with V-PIN. If there is waving distortion, adjust V-4TH PIN and V-S C PIN. Repeat these adjustments until all the horizontal lines in both upper and lower sections of the screen are straight.	The wavy lines (third-order) are corrected in the E block on the screen. As shown in the figure to the left, the upper and lower sections move symmetrically in relation to the center line.
V-PIN	⑥				E block	Adjust so that any bowed lines in the attention-point blocks on the screen shown in the figure to the left are straight.		The bowed lines are corrected in the E block on the screen. As shown in the figure to the left, the upper and lower sections move symmetrically in relation to the center line.
V-MID PIN					D block and the center-line side of E block. (Especially the center-line side of the E block)	Adjust so that any bowed lines in the attention-point blocks on the screen shown in the figure to the left are straight.		The bowed lines are corrected on the center line side of E block on the screen. As shown in the figure to the left, the upper and lower sections move symmetrically in relation to the center line.
V-4TH PIN					D and E blocks	Adjust so that any wavy lines in the attention-point blocks on the screen shown in the figure to the left are straight.		The wavy lines (fourth-order) are corrected in the upper and lower sections (D and E blocks) of the screen. As shown in the figure to the left, the upper and lower sections move symmetrically in relation to the center line.

Note:
▷——◁ : Line which does not move at all.

9.3.2 Lean Adjustment in the Vertical Direction

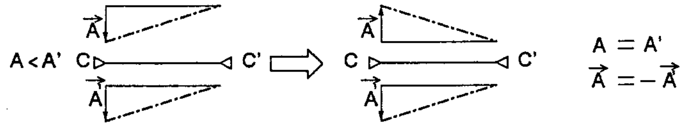
See Table 9-9 for the picture movements and general information on this adjustment.
In this adjustment, lean of the picture is corrected. Adjust V-SUB KEY, V-MID KEY and V-KEY to eliminating any lean in the upper and lower sections of the screen.

Table 9-9 Lean Adjustment in the Vertical Direction

Item	Numeric Button of the Remote Control Unit	Deviating Picture	Corrected Picture	Deviating Picture	Attention Point on the Screen During Adjustment	Adjustment Point		Remarks
V-SUB KEY *2	③				E block	Adjust to eliminate the lean in the attention-point blocks on the screen shown in the figure to the left. If the lean cannot be eliminated, set the screen to the status in which V-KEY has deviation as shown in Fig. 9-11, and adjust V-KEY.	,	The lean in the E block of the screen is corrected. The lines in the upper and lower sections of the screen move in the same direction.
V-KEY *1	④				E block	Adjust to eliminate the lean in the attention-point blocks on the screen shown in the figure to the left.	First adjust V-MID KEY so that the lean in the D block is eliminated. Then adjust V-SUB KEY and V-KEY so that the lean in the E block is eliminated. Repeat these adjustments until any lean in the upper and lower sections of the screen is eliminated.	The lean in the E block of the screen is corrected. The upper and lower sections move symmetrically in relation to the center line.
V-MID KEY *1					D block	Adjust to eliminate any lean at the attention-point blocks on the screen shown in the figure to the left.		The lean in the upper and lower sections (D and E blocks) of the screen is corrected. The upper and lower sections move symmetrically in relation to the center line.

*1: V-MID KEY and V-KEY work relative to each other. Be sure to adjust them alternately.
*2: V-SUB-KEY substantially differs from that of the previous-year model SD-P4053-K in picture movement and attention points.

Note:
▷———◁ : Line which does not move.



Note:
▷———◁ : Center horizontal line
———— : Reference line
-·-·-·- : Leaned line

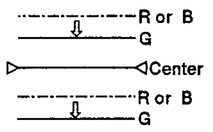
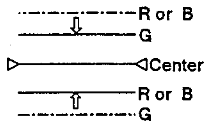
$\vec{A}$: Vector of the deviation in the upper section of the screen
$\vec{A}$: Vector of the deviation in the lower section of the screen
A : Scalar quantity of the deviation in the upper section of the screen
A' : Scalar quantity of the deviation in the lower section of the screen

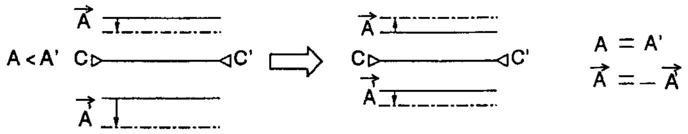
Fig. 9-11 Example of Vertical Lean Adjustment

9.3.4 Line-Interval Adjustment in the Vertical Direction

See Table 9-11 for the picture movements and general information on this adjustment.
In this adjustment, the intervals of the horizontal lines in the upper and lower sections of the screen are corrected with V-LIN, V-SIZE and V-SUB LIN. Converge the horizontal lines in the upper and lower sections of the screen in the green horizontal lines which have been set for reference.
The differences between V-LIN, V-SIZE and V-SUB LIN are shown in Table 9-12.

Table. 9-12 Difference Between Adjustment Items

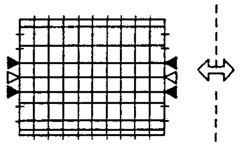
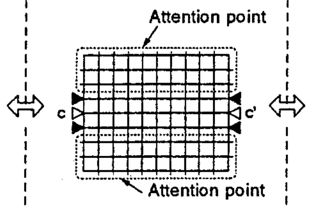
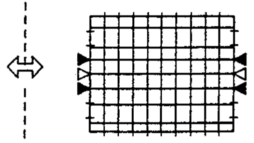
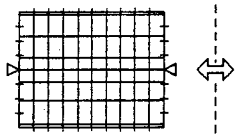
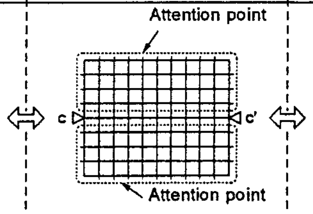
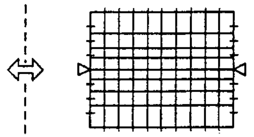
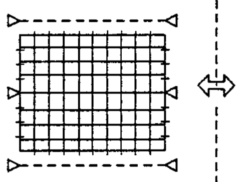
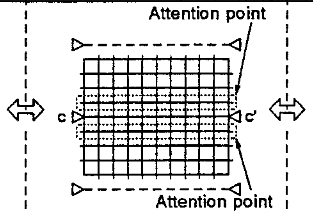
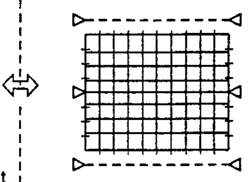
Item	Screen Example	Remarks
V-LIN		V-LIN should be adjusted when the upper and lower sections of the screen show deviation in the same direction.
V-SIZE and V-SUB LIN		V-SIZE and V-SUB LIN should be adjusted when the upper and lower sections of the screen show the upper and lower sections move symmetrically in relation to the center line.



Note:
▷——◁ : Center horizontal line
—— : Reference line
-·-·-·- : Deviating line
$\vec{A}$: Vector of the deviation in the upper section of the screen
$\vec{A'}$: Vector of the deviation in the lower section of the screen
A : Scalar quantity of the deviation in the upper section of the screen
A' : Scalar quantity of the deviation in the lower section of the screen

Fig. 9-13 Example of V-LIN Adjustment

Table 9-11 Line-Interval Adjustment in the Vertical Direction

Item	Numeric Button of the Remote Control Unit	Deviating Picture	Corrected Picture	Deviating Picture	Attention Point on the Screen During Adjustment	Adjustment Point		Remarks
V-LIN	⑦				E block	Observe the movements with V-SIZE and V-SUB LIN and move the lines in the upper and lower sections in the opposite directions to the same extent. (See Fig. 9-13.) When the convergence on the green lines is achieved, further adjustments with V-SIZE and V-SUB LIN are not necessary.		The line intervals are corrected centering the D and E blocks on the screen. As shown in the figure to the left, the lines in the upper and lower sections of the screen move centering the respective E block.
V-SIZE	⑧				D and E blocks	Converge the horizontal lines in the green horizontal lines which have been set for the reference.	Adjust the horizontal lines in the upper and lower sections of the screen with V-SIZE. If the lines in the D block cannot be converged, adjust V-SUB LIN.	The line intervals in the upper and lower sections (D and E blocks) of the screen are corrected. As shown in the figure to the left, the line intervals in the upper and lower sections of the screen change with the center line as the axis.
V-SUB LIN	⑨				D block	Converge the horizontal lines in the attention-point sections in the green horizontal lines which have been set for reference.		The line intervals in the D block on the screen are corrected. As shown in the figure to the left, the lines in the upper and lower sections move centering the respective D block in the same manner as with V-SIZE.

Note:
▷——◁ : Line which does not move at all.
▶——◀ : Line which hardly moves.
▷- - - - - - - -◁ : Line which does not move out of screen.

9.4 H, V - STATIC AND USER CONVERGENCE (Red and Blue only)

The H - and V - STATIC data in CONVER ADJ mode and the variable data of the user convergence are the same (i.e. the data value 0 of H- and V- STATIC corresponds to the center of the variable range of the user convergence, whose data value is also 0).

Therefore, when CONVER ADJ mode is released after adjusting H- and V- STATIC, the adjusted data values of H- and V- STATIC become the user-convergence values, maintaining the proper convergence setting on the screen.

Note: No telop indication is available for the user convergence values.

9.5 CONVERGENCE ADJUSTMENT PROCEDURE

- Supply a cross-hatch signal and perform the adjustment while observing the screen.
- The procedure shown here is a typical example. It may be applied in the most convenient way in actual practice.
- Before and after adjustment, check the horizontal and vertical sizes by observing the monoscope screen. If required, adjust the sizes by performing steps 3 and 4 in 9.4.2.
- When the deflection yoke has been replaced or removed to replace the CRT assembly, perform the following two adjustments before convergence adjustment.

(1)Adjust the orthogonality (inclination) of the vertical and horizontal lines.

For green lines, set V - SKEW (VR651) to the center. For the red and blue lines, set both the H- and V- SKEW values to 0.

Roughly adjust the orthogonality of the vertical and horizontal lines by turning the deflection yoke, and then finely adjust it through the respective SKEW controls. (The attention point in SKEW adjustment is the center lines on the screen.)

(2)Adjust the position of the center lines.

For the green lines, turn the centering magnet of the deflection yoke and set the horizontal and vertical center lines to the center of the screen.

For the red and blue lines, set the H- and V- STATIC values to 0 and roughly adjust by turning the centering magnet of the deflection yoke. Then fine-adjust by changing the H- and V- STATIC values within the range of 010 to - 010.

9.5.1 Green Adjustment

- Activate CONVER ADJ mode of FACTORY ADJ mode and display only the green lines on the screen.
- Use the controls in the convergence assembly.
- The green lines must be accurately adjusted as they will be the reference for subsequent red and blue adjustments.
- For information on blocks which are referred to in some Operation columns, see Fig. 9 - 6 and Fig. 9 - 10.
- Before adjustment, check that the green center vertical line is perfectly vertical. If not, turn the deflection yoke and fine - adjust with GV - SKEW.

Step No.	Adjustment Item		Adjustment Point	Adjustment Procedure
1	Center line adjustment	GV-SKEW	VR651	Adjust so that the center horizontal line of the screen is not leaned.
2		GV-BOW	VR652	Adjust so that the center horizontal line of the screen is straight.
3	Repeat steps 1 and 2 to obtain the optimum center horizontal lines.			
4	Distortion adjustment	GV-PIN	VR654	Adjust so that the horizontal lines in the E block of the screen are straight.
5		GH-PIN	VR655	Adjust so that the vertical lines in the B and C blocks on the screen are straight.
6	Lean adjustment	GV-KEY	VR653	Adjust so that the horizontal lines in the E block of the screen are not leaned.
7		GH-KEY	VR656	Adjust so that the vertical lines in the B and C blocks on the screen are not leaned.
8	Repeat steps 4 through 7 and then 1 through 7 to obtain the optimum lines.			

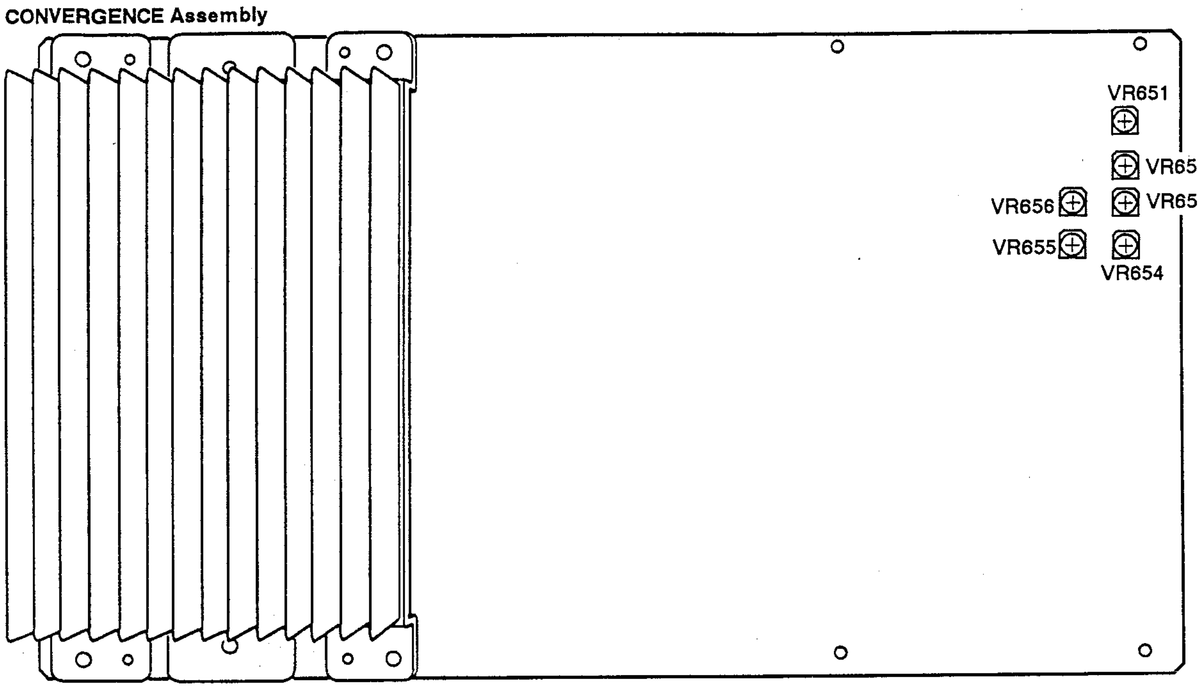


Fig. 9-14 CONVERGENCE Assembly

9.5.2 Red Adjustment

- Perform the red adjustment when the green adjustment is completed.
- Display the green and red lines only. Move the red lines to converge them in the green lines so that the lines are seen in yellow.
- For information on blocks which are referred to in some Operation columns, see Fig. 9 - 6 and Fig. 9 - 10.
- Before adjustment, check that the center vertical line and the center horizontal lines are at right angles to each other. If not, turn the deflection yoke and fine - adjust with RH - and RV - SKEW.

● Red Adjustment in the Horizontal Direction

•Activate CONVER ADJ mode in FACTORY ADJ mode and adjust with RH.

Step No.	Adjustment Item		Adjustment Point (Numeric button of the remote control unit)	Adjustment Procedure
1	Center line adjustment	RH-SKEW	①	Adjust so that the center vertical line of the screen is not leaned.
2		RH-BOW	②	Adjust so that the center vertical line of the screen is not distorted and is straight.
3		RH-4TH BOW		
4		RH-STATIC	⓪	Converge the center vertical line in the green vertical line. (Change the data value within the indication range of 010 to - 010. If it cannot be optimized, set the value to 0 and turn the centering magnet of the deflection yoke and fine-adjust with RH-STATIC.)
5	Repeat steps 1 to 4 to obtain the optimum center vertical line.			
6	Lean adjustment	RH-SUB KEY	③	Adjust so that the vertical lines in the B and C blocks of the screen are not leaned.
7		RH-KEY	④	
8	Repeat steps 6 and 7 to obtain vertical lines that are most perfectly vertical in the B and C blocks of the screen.			

Step No.	Adjustment Item		Adjustment Point (Numeric button of the remote control unit)	Adjustment Procedure
9	Distortion adjustment	RH-M S PIN	⑤	Adjust so that the vertical lines in the right and left sections of the screen are not distorted and are straight.
10		RH-SUB PIN		
11		RH-4 S PIN		
12		RH-MID PIN	⑥	
13		RH-PIN		
14		RH-4TH PIN		
15	Repeat steps 9 to 14 to obtain straight vertical lines in the right and left sections of the screen.			
16	Repeat steps 6 to 15 to obtain the optimum vertical lines in the right and left sections of the screen.			
17	Line intervals adjustment	RH-4TH LIN	⑦	Adjust the intervals of the vertical lines in the right and left sections of the screen and converge them in the green vertical lines.
18		RH-LIN		
19		RH-SIZE	⑧	
20		RH-SUB LIN	⑨	
21	Repeat steps 17 to 20 to obtain the optimum vertical lines in the right and left sections of the screen.			
22	Fine-adjust over the entire picture to obtain the optimum picture.			

- **Red Adjustment in the Vertical Direction**

•Activate CONVER ADJ mode in FACTORY ADJ mode and adjust with RV.

Step No.	Adjustment Item		Adjustment Point (Numeric button of the remote control unit)	Adjustment Procedure
1	Center line adjustment	RV-SKEW	①	Adjust so that the center horizontal line of the screen is not leaned.
2		RV-BOW	②	Adjust so that the center horizontal line of the screen is not distorted and is straight.
3		RV-STATIC	⓪	Converge the center horizontal line in the green horizontal line. (Change the data value within the indication range of 010 to -010. If it cannot be optimized, set the value to 0 and turn the centering magnet of the deflection yoke and fine-7adjust with RV-STATIC.)
4	Repeat steps 1 to 3 to obtain the optimum center horizontal line.			
5	Lean adjustment	RV-MID KEY	④	Adjust so that the horizontal lines in the D and E blocks of the screen are not leaned.
6		RV-SUB KEY	③	
7		RV-KEY	④	
8	Repeat steps 5 and 6 to obtain the horizontal lines that are most perfectly horizontal in the D and E blocks of the screen.			
9	Distortion adjustment	RV-SUB PIN	⑤	Adjust so that the horizontal lines in the upper and lower sections of the screen are not distorted and are straight.
10		RV-MID PIN	⑥	
11		RV-PIN		
12		RV-S C PIN	⑤	
13		RV-4TH PIN	⑥	
14	Repeat steps 9 to 13 to obtain straight horizontal lines in the upper and lower sections of the screen.			
15	Repeat steps 5 to 14 to obtain the optimum horizontal lines in the upper and lower sections of the screen.			
16	Line intervals adjustment	RV-LIN	⑦	Adjust the intervals of the horizontal lines in the D and E blocks of the screen and converge them in the green horizontal lines.
17		RV-SIZE	⑧	
18		RV-SUB LIN	⑨	
19	Repeat steps 16 to 18 to obtain the optimum horizontal lines in the upper and lower sections of the screen.			
20	Fine-adjust over the entire picture to obtain the optimum picture.			

9.5.3 Blue Adjustment

- Perform the blue adjustment when the green adjustment is completed.
- Display the green and blue lines only. Move the blue lines to converge them in the reference green lines so that the lines are seen in cyan.
- The adjustment items are shown below.
  Adjustment operations are the same as those in 9.5.2 Red Adjustment.

• Blue Adjustment in the Horizontal Direction
Activate CONVER ADJ mode in FACTORY ADJ mode and adjust with BH.

Step No.	Adjustment Item		Adjustment Point (Numeric button of the remote control unit)
1	Center line adjustment	BH-SKEW	①
2		BH-BOW	②
3		BH-4TH BOW	
4		BH-STATIC	⓪
5	Lean adjustment	BH-SUB KEY	③
6		BH-KEY	④
7	Distortion adjustment	BH-M S PIN	⑤
8		BH-SUB PIN	
9		BH-4 S PIN	
10		BH-MID PIN	⑥
11		BH-PIN	
12		BH-4TH PIN	
13	Line intervals adjustment	BH-4TH LIN	⑦
14		BH-LIN	
15		BH-SIZE	⑧
16		BH-SUB LIN	⑨

• Blue Adjustment in the Vertical Direction
Activate CONVER ADJ mode in FACTORY ADJ mode and adjust with BV.

Step No.	Adjustment Item		Adjustment Point (Numeric button of the remote control unit)
1	Center line adjustment	BV-SKEW	①
2		BV-BOW	②
3		BV-STATIC	⓪
4	Lean adjustment	BV-MID KEY	④
5		BV-SUB KEY	③
6		BV-KEY	④
7	Distortion adjustment	BV-SUB PIN	⑤
8		BV-MID PIN	⑥
9		BV-PIN	
10		BV-S C PIN	⑤
11		BV-4TH PIN	⑥
12	Line intervals adjustment	BV-LIN	⑦
13		BV-SIZE	⑧
14		BV-SUB LIN	⑨

10. REPLACING THE CRT ASSEMBLY

Serviceman Warning
When replacing the CRT assembly, turn off the power, unplug the AC plug and let the unit discharge for more than 1 minute.

The anode cables of the CRT assembly R, G, and B in PROJECTION MONITOR RECEIVER are connected in series as shown in Fig. 10-1.
When replacing the CRT assembly, the anode cable have to be cut.

Note: Since the anode cables for the CRT assembly to service supplies are only available in half lengths, either cut longer lengths, or join older lengths of cable to ensure that the original cable length is used.

Table 10-1 Cable disconnecting methods

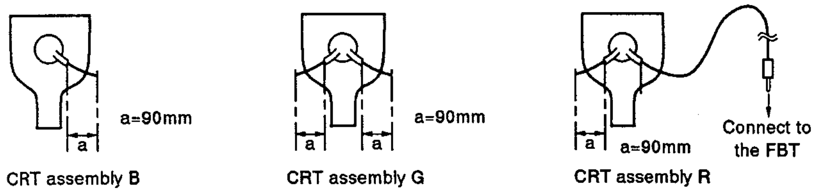
Cable	Replacement CRT assembly		
	When CRT assembly B is replaced	When CRT assembly G is replaced	When CRT assembly R is replaced
Cable ⓐ	——	——	Disconnect the anode cable from the FBT. (Refer to page 102.)
Cable ⓑ	Leave it as is	Cut a place 20mm from the exact center towards the CRT assembly G	Cut a place 20mm from the exact center towards the CRT assembly R
Cable ⓒ	Cut a place 20mm from the exact center towards the CRT assembly B	Cut a place 20mm from the exact center towards the CRT assembly G	Leave it as is

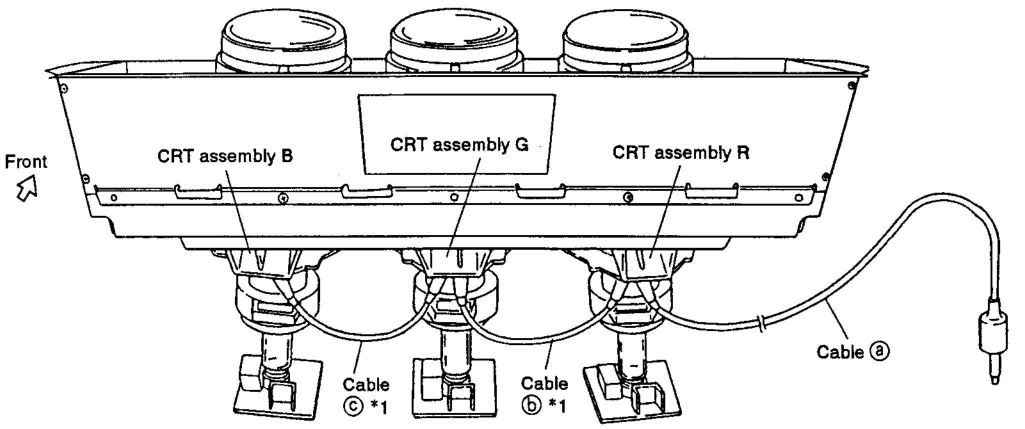
Note: Do not cut other cables by mistake.

10.1 WHEN REPLACING THE CRT ASSEMBLY

Unplug the AC plug and let the unit discharge for more than 1 minute, then cut the anode cable according to table 10-1.

Each CRT assembly supplied as a spare part is as shown below.





*1 : Length of cable ⓒ and ⓑ is 180mm.

Fig. 10-1 Connection diagram of the each CRT assemblies

10.2 ANODE CABLE SHEATH PEELING

- Peel the sheath of the end of cut anode cable and new anode cable.
- The anode cable structure is outlined in Fig. 10-2. Note that the sheath consists of two layers.
- The method used to peel the sheath back is illustrated in Fig. 10-3. Use a cutter knife, taking care not to damage the core leads.

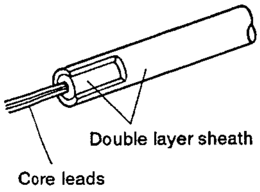

Double layer sheath
Core leads

Fig. 10-2 Anode cable structure

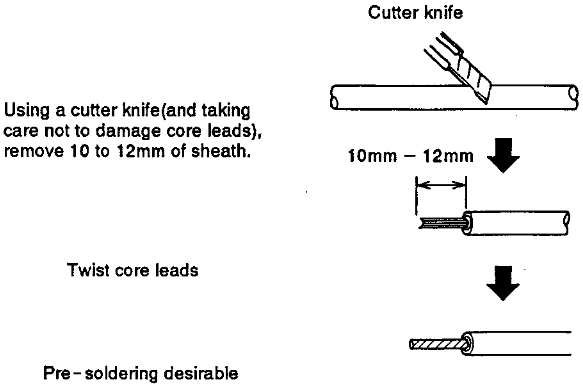
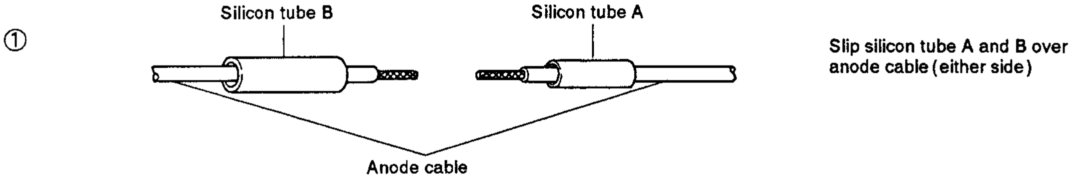

Cutter knife
Using a cutter knife(and taking care not to damage core leads), remove 10 to 12mm of sheath.
10mm – 12mm
Twist core leads
Pre-soldering desirable

Fig. 10-3 Anode cable sheath peeling

10.3 ANODE CABLE JOINING PROCEDURE

- Join the cut anode cable and the new anode cable to restore as shown in Fig. 10-1.
- Slip two silicon tubes(silicon tubes A and B in Fig. 10-4) over the anode cables before making the join.
- The silicon adhesive is applied to guard the cable core leads from external air. Apply binder liberally. After completing the joint (at step ⑩ in Fig. 10-4-1 thru 3), check that there is no hole in the silicon binder and the tube interior cannot be seen.
- Leave the silicon adhesive to harden overnight.

CAUTION: For the silicon adhesive, be sure to use silicon adhesive part no. GYL-017.


①
Silicon tube B
Silicon tube A
Slip silicon tube A and B over anode cable (either side)
Anode cable

NOTE: Silicon tube A: Short thin contracting tube
Silicon tube B: Long thick contracting tube
} Supplied when ordering CRT assembly or the anode cable kit.

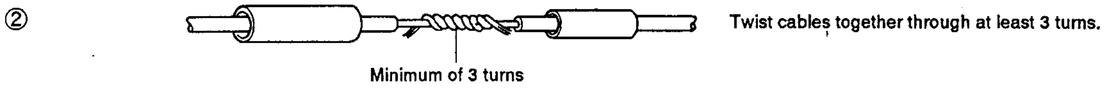
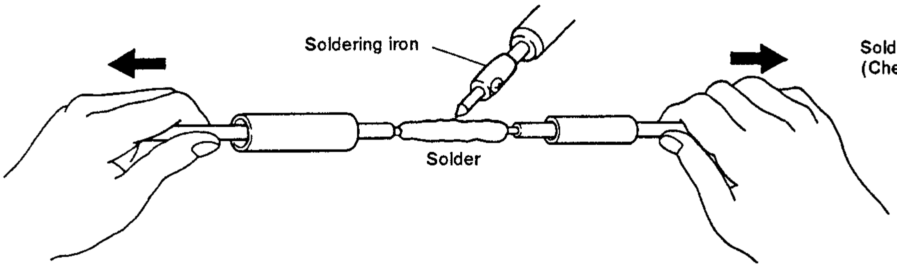

②
Twist cables together through at least 3 turns.
Minimum of 3 turns

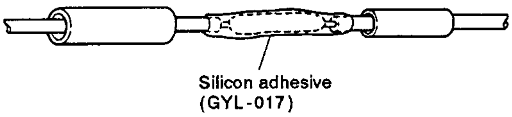
Fig. 10-4-1 Anode cable joining procedure (1)

③


Soldering iron
Solder

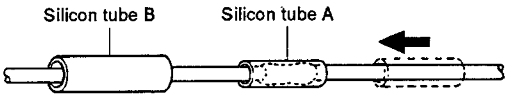
Solder the joint, and pull at both ends.
(Check against faulty soldering.)

④


Silicon adhesive
(GYL-017)

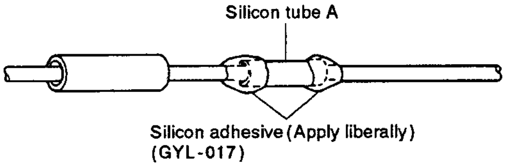
Apply silicon adhesive liberally.
(Cover the entire soldered section and remaining bare core leads.)

⑤


Silicon tube B
Silicon tube A

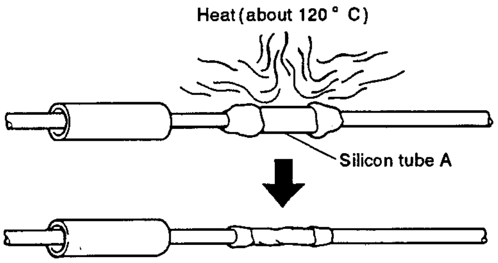
Cover the silicon adhesive section with silicon tube A.
(With the center of the silicon tube A corresponding to the solder section)

⑥


Silicon tube A
Silicon adhesive (Apply liberally)
(GYL-017)

Apply liberal amounts of silicon adhesive to both ends of silicon tube A

⑦

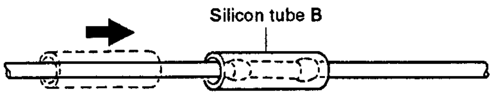

Heat (about 120 ° C)
Silicon tube A

Apply heat (about 120 ° C) to contract silicon tube A.

Note: Use an industrial drier or soldering iron as the heat source.

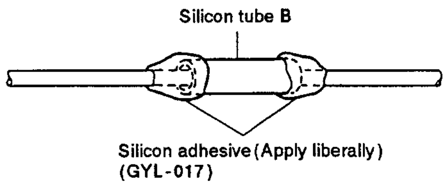
Check that the silicon adhesive has been applied evenly without air pockets etc. If there are any pockets etc, apply additional silicon adhesive.

⑧


Silicon tube B

Slip silicon tube B over silicon tube A.
(With the center of silicon tube B also corresponding to the solder section)

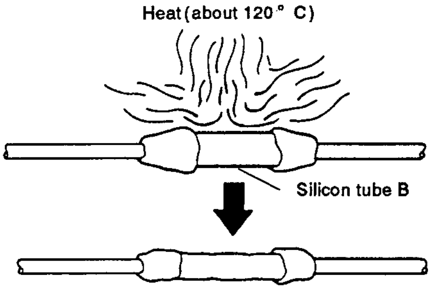
⑨


Silicon tube B
Silicon adhesive (Apply liberally)
(GYL-017)

Apply liberal amounts of silicon adhesive to both ends of silicon tube B.

Fig. 10-4-2 Anode cable joining procedure (2)

⑩

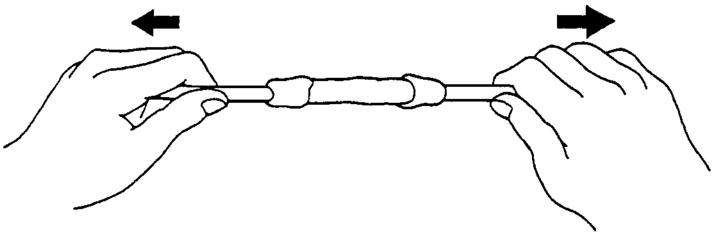


Apply heat(about 120° C)to contract silicon tube B.

Note: Use an industrial drier or soldering iron as the heat source.

Check that the silicon adhesive has been applied evenly without air pockets etc. If there are any pockets etc, apply additional silicon adhesive.

⑪



Gently tug both ends to check that the cables do not separate.

Fig. 10-4-3 Anode cable joining procedure(3)

11. IC INFORMATION

- The information shown in the list is basic information and may not correspond exactly to that shown in the schematic diagrams.

■ PD5218A (IC2001)

• Closed Caption Signal Detector and Character Decoder

● Pin Function

Note) I : CMOS input O : CMOS output N : N ch open dolein output

No.	Name	I / O	Function	No.	Name	I / O	Function
1	HSYNC	I	Horizontal sync. signal input.	27	VCC	I	+5V power supply voltage
2	VSYNC	I	Vertical sync. signal input.	28	OSC2	O	Input/output pins of the clock generator circuit for OSD. Connect the 12MHz ceramic resonator.
3	R IN	I	R input	29	OSC1	I	
4	G IN	I	G input	30	RESET	I	Reset input. Input "L" for reset.
5	B IN	I	B input	31	NOT USED	I	+5V pull-up
6	BLK IN	I	Blanking input	32			
7	NOT USED	I	5V pull-up	33			
8				34			
9				35			
10				36			
11				37			
12				38			
13				39			
14				40			
15	CC ENB	I	Serial data enable input	41			
16	SIN	I	Serial data input	42			
17	SCLK	I	Serial clock input	43			
18	NOT USED	I	GND pull-down	44			
19	VHOLD	–	For data slicer (VHOLD-VSS 0.1 μF)	45			
20	VIN	I	For data slicer (VIN-VOUT 0.1 μF)	46			
21	VOUT	O		47			
22	CVIN	I	Video input for data slicer	48			
23	CNVSS	I	GND	49	BLK OUT	O	Blanking output
24	XIN	I	Input/output pins of the main clock genaration circuit. Connect the 8MHz ceramic resonator.	50	B OUT	O	B output
25	XOUT	O		51	G OUT	O	G output
26	VSS	I	GND	52	R OUT	O	R output

PD5217B (IC451)

• System Control Microcomputer

● Pin Function

Note) I : CMOS input O : CMOS output N : N ch open dolein output

No.	Pin Name	I/O	Function	Active
1	OSC1	I	Clock input and output for display.	
2	OSC2	O		
3	KEYIN	I	Front control key scan signal input. Decipher the format signal of IC551 (PD5136) of the front control circuit.	L
4	AFT OPT	I	Analog voltage input for AFT control. 3 stages. Analog voltage input for OPTION. 4 stages. *1	
5	REMIN	I	Remote control signal input. Decipher the SR format signal.	L
6	ADSEL-1	O	A/D switching output.	
7	COLOR	N	PWM output for color level control.	H
8	TINT	N	PWM output for tint level control.	H
9	CONTR	N	PWM output for contrast level control.	H
10	BRIGHT	N	PWM output for brightness level control.	H
11	SHARP	N	PWM output for sharpness level control.	H
12	DETAIL	N	PWM output for detail level control.	H
13	VOLUME	N	PWM output for volume level control.	H
14	(P67)	–	Not used.	H
15	HS	I	Horizontal sync count input for tuner reception. When the status in which there are 12 to 18 H-SYNC pulses in 1 msec continues 8 times, it is regarded that there is a broadcast. When any other status continues 6 times, it is regarded that there is no broadcast.	
16	AC CLK	I	AC clock detection input. Used for detection of AC power OFF. Dummy reset (software reset) is generated when no AC clock is supplied for 100 msec.	
17	A MUTE	O	Audio mute output. When selecting MUTE mode, switching input and turning power ON/OFF, Audio mute is output.	H
18	(P30)	–	Not used.	
19	SEL-B	O	Output terminal B for multiplexer switching.	
20	SEL-A	O	Output terminal A for multiplexer switching.	
21	SCLK2	N	I^2C serial transmission clock. Use for IC454 (MC14051BCP) of the control circuit.	
22	SOUT2	I/N	I^2C serial data input and output.	
23	4051-C	N	Switching output for multiplexer IC454 (MC14051BCP) of the control circuit.	
24	SIN	I	Serial data input. Used for tuner PLL, PINP (*), PINP and convergence circuit. * : AWV1364 is not used.	
25	SCLK1	N	Serial clock.	
26	SOUT1	N	Serial data output.	
27	CNVSS		Connect to VSS.	
28	NC	O	Timing output terminal. (Not used)	
29	RESET	I	System reset. Reset is done by applying L for more than 0.95 μsec (when OSC=4.19 MHz).	L
30	X in	I	Input and output terminals for generating the main clock. Connect the ceramic resonator of 4.19 MHz.	
31	X out	O		
32	VSS		Apply 0V to VSS.	
33	CONV B-MUT	O	R, G and B MUTE output when adjusting convergence.	H
34	CONV G-MUT	O		H
35	CONV R-MUT	O		H
36	ACL-OFF	O	Peak ALC OFF output.	H

<table>
<tr><th>No.</th><th>Pin Name</th><th>I/O</th><th>Function</th><th>Active</th></tr>
<tr><td>37</td><td>INP2</td><td>O</td><td>Input switching signal output.</td><td></td></tr>
<tr><td>38</td><td>INP1</td><td>O</td><td rowspan="2"><table><tr><th>Input</th><th>TV</th><th>LD</th><th>VIDEO</th></tr><tr><td>Pin 39 (INP0)</td><td>H</td><td>H</td><td>L</td></tr><tr><td>Pin 38 (INP1)</td><td>H</td><td>L</td><td>L</td></tr><tr><td>Pin 37(INP2)</td><td>L</td><td>H</td><td>H</td></tr></table></td><td></td></tr>
<tr><td>39</td><td>INP0</td><td>O</td><td></td></tr>
<tr><td>40</td><td>RELAY</td><td>O</td><td>Power relay control signal output. ON→L , OFF→H</td><td>L</td></tr>
<tr><td>41</td><td>ADSEL-2</td><td>O</td><td>A/D switching output.<table><tr><th></th><th>AFT</th><th>OPT</th></tr><tr><td>Pin 6 (ADSEL-1)</td><td>H</td><td>H</td></tr><tr><td>Pin 41 (ADSEL-2)</td><td>L</td><td>H</td></tr></table></td><td></td></tr>
<tr><td>42</td><td>4094-STB</td><td>O</td><td>Expander IC701 (TC4094BP) of the PINP circuit strobe for switching the PINP sub-picture. AWV1364 is not used.</td><td>H</td></tr>
<tr><td>43</td><td>PINP-ENB</td><td>O</td><td>Used for the data transfer to PINP IC704 (MB86153BPF). AWV1364 is not used.</td><td>H</td></tr>
<tr><td>44</td><td>CONV-MUTE</td><td>O</td><td>MUTE output for IC603 and IC604 (PM0002A) of the convergence circuit .</td><td>L</td></tr>
<tr><td>45</td><td>CONV-ENB</td><td>O</td><td>Data enable for IC603 and IC604 (PM0002A) of the convergence circuit.</td><td>L</td></tr>
<tr><td>46</td><td>PLL-ENB</td><td>O</td><td>Data enable for PLL (TV front-end and IF pack) of the tuner circuit.</td><td>H</td></tr>
<tr><td>47</td><td>C.C RESET</td><td>O</td><td>C.C.D. (PD5218) reset signal output.</td><td>H</td></tr>
<tr><td>48</td><td>C.C ENB</td><td>O</td><td>C.C.D. (PD5218) data ENB signal output.</td><td>H</td></tr>
<tr><td>49</td><td>V MUTE</td><td>O</td><td>Video mute signal output.</td><td>H</td></tr>
<tr><td>50</td><td>STEREO</td><td>I</td><td>Broadcast format deciding input.</td><td>L</td></tr>
<tr><td>51</td><td>SAP</td><td>I</td><td><table><tr><th></th><th>STEREO/SAP</th><th>SAP</th><th>STEREO</th><th>MONO</th></tr><tr><td>Pin 49 (STEREO)</td><td>L</td><td>H</td><td>L</td><td>H</td></tr><tr><td>Pin 50 (SAP)</td><td>L</td><td>L</td><td>H</td><td>H</td></tr></table></td><td>L</td></tr>
<tr><td>52</td><td>MTS1</td><td>O</td><td>MTS mode output. Effective only when SAP is included in on-air signals. In other conditions, the logic in parentheses is used.</td><td>L</td></tr>
<tr><td>53</td><td>MTS0</td><td>O</td><td><table><tr><th></th><th>MAIN/SAP</th><th>MAIN</th><th>SAP</th><th>MONO</th></tr><tr><td>Pin 52 (MTS0)</td><td>L (L)</td><td>L</td><td>H (L)</td><td>H</td></tr><tr><td>Pin 51 (MTS1)</td><td>L (H)</td><td>H</td><td>L (H)</td><td>H</td></tr></table></td><td>L</td></tr>
<tr><td>54</td><td>TV-A</td><td>O</td><td>TV audio mute output.</td><td>L</td></tr>
<tr><td>55</td><td>TV-TEST</td><td>I</td><td>Tuner test mode detection input</td><td>L</td></tr>
<tr><td>56</td><td>PLL LOCK</td><td>I</td><td>PLL lock detection input.</td><td>L</td></tr>
<tr><td>57</td><td>BLK OUT</td><td>O</td><td rowspan="5">Video output for OSD.</td><td>H</td></tr>
<tr><td>58</td><td>TEST CROSS</td><td>O</td><td>H</td></tr>
<tr><td>59</td><td>B</td><td>O</td><td>H</td></tr>
<tr><td>60</td><td>G</td><td>O</td><td>H</td></tr>
<tr><td>61</td><td>R</td><td>O</td><td>H</td></tr>
<tr><td>62</td><td>VSYNC</td><td>I</td><td rowspan="2">Synchronizing signal input for OSD.</td><td>L</td></tr>
<tr><td>63</td><td>HSYNC</td><td>I</td><td>L</td></tr>
<tr><td>64</td><td>VDD</td><td>I</td><td>Apply +5V power supply.</td><td></td></tr>
</table>

* 1 : Option analog voltage.
Used as follows by adding the divided voltage of 5 V which is obtained from two resistors, R594 and R595, to pin 4.

Family	Part No. of the TUNER-VIDEO Assembly	Voltage
71 family/KUX1C	AWV1355	3.280 – 2.657V
71 family/KCX1C	AWV1361	2.655 – 1.719V
SD-P457-Q	AWV1364	1.717 – 0.782V

Note ; 71 family : SD-P5071-K, SD-P5071-Q, SD-P4571-K and SD-P4571-Q

12. POWER DOWN TYPE PROTECTION DESCRIPTION

• RY102 ON DETECTOR CIRCUIT

Detects the surge killer (R111, R113) is short-circuited with RY102.

When RY102 is not turned on, a voltage is generated at R111 and R113.

IC101 detects this voltage and turns on Q102. Subsequently, power is turned off with the following procedure.

Q102 : ON → Q103, Q104 : OFF → RY101, RY102 OFF
→ Q101 : ON (holding Q102 in ON status even after RY101 is turned off)

• HEATER UPPER VOLTAGE DET. CIRCUIT

Detects a rise in the voltage between HT+ and HT – . When the voltage between HT+ and HT – rises, Q110 is turned on, turning on Q102. The subsequent operations are the same as with the "RY102 ON DETECTOR CIRCUIT".

• +135V REGULATOR OVERLOAD DET. CIRCUIT

Detects overloading of the +135V regulator due to an error at the circuit which supplies +135V. If the current flowing through R144 is extraordinarily increased, the +135V regulator is overloaded.

If the current flowing through R144 is extraordinarily increased, the voltage generated at R144 is overloaded. This voltage turns on Q172, turning on Q102. The subsequent operations are the same as with the "RY102 ON DETECTOR CIRCUIT".

• X–RAY PROTECTION CIRCUIT

Detects a rise in the anode voltage of the CRT. When the anode voltage of the CRT rises, the voltage at pin 4 of T151 (F.B.T.) also rises. The voltage at pin 4 of T151 is detected by Q170. When this voltage rises, Q170 is turned off and Q167 is turned on, turning on Q102. The subsequent operations are the same as with the "RY102 ON DETECTOR CIRCUIT".

• H. SIGNAL DET. CIRCUIT

This circuit prevents the CRT from being damaged when the horizontal deflecting signal stops. It detects H. SIGNAL. It takes out H. SIGNAL from the cathode connecting point of D178 and generates a DC voltage using D155 and C213. This voltage back-biases Q165 to set it in OFF status. When H. SIGNAL stops, the DC voltage by which Q165 is back-biased is lost. This turns on Q165, turning on Q102. The subsequent operations are the same as with the "RY102 ON DETECTOR CIRCUIT".

• V. SIGNAL DET. CIRCUIT

This circuit prevents the CRT from being damaged when the vertical deflecting signal stops. It detects V. SIGNAL. By detecting V. SIGNAL (V. RETURN) generated at R324 in Q210, Q210 is cyclically turned on and off when V. SIGNAL is available. With the function of C289, the collector of Q210 is held at a low level.

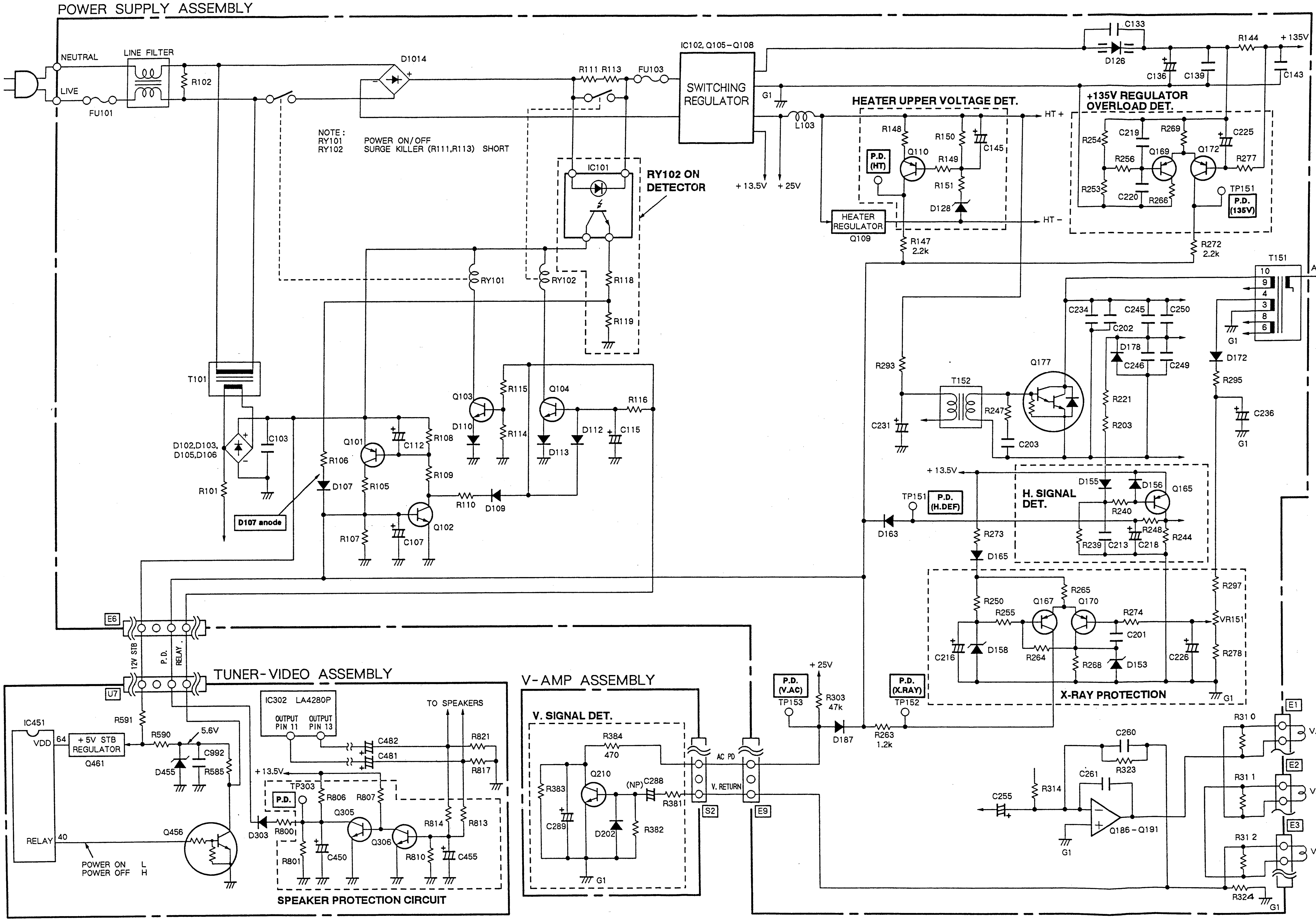
When V. SIGNAL stops, Q210 enters in OFF status and the collector voltage of Q210 rises. This voltage turns on Q102. The subsequent operations are the same as with the "RY102 ON DETECTOR CIRCUIT".

• SPEAKER PROTECTION CIRCUIT

This circuit prevents the speakers from being damaged when a DC voltage leaks to the speaker due to a trouble in the audio circuits. It detects a + DC voltage.

If a DC voltage higher than approximate 5.3V leaks to the – (minus) side of C481 and C482 due to a circuit trouble, Q306 is turned on and Q305 is turned off, raising the collector voltage of Q305.

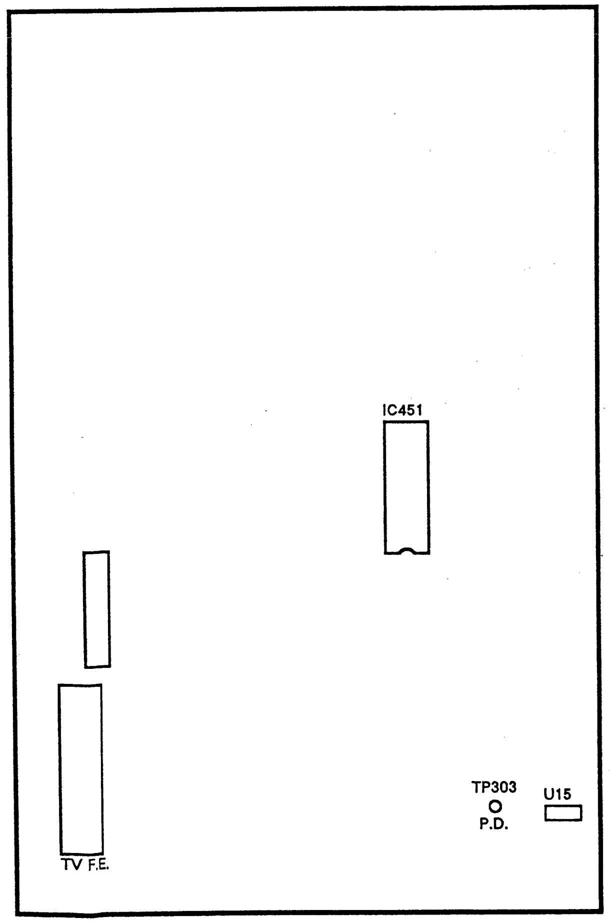
This voltage turns on Q102. The subsequent operations are the same as with the "RY102 ON DETECTOR CIRCUIT".


POWER SUPPLY ASSEMBLY
NEUTRAL
LIVE
LINE FILTER
FU101
R102
D1014
R111 R113
FU103
IC102, Q105–Q108
SWITCHING REGULATOR
G1
L103
+13.5V
+25V
NOTE :
RY101 POWER ON/OFF
RY102 SURGE KILLER (R111,R113) SHORT
IC101
RY102 ON DETECTOR
RY101
RY102
R118
R119
T101
D102,D103, D105,D106
C103
R101
D107 anode
R106
D107
Q101
R105
C112
R108
R109
R107
C107
Q102
R110
D109
Q103
D110
R115
R114
Q104
D113
D112
C115
R116
C133
D126
C136
C139
R144
+135V
C143
HEATER UPPER VOLTAGE DET.
HT+
HT−
R148
Q110
P.D. (HT)
R150
C145
R149
R151
D128
HEATER REGULATOR
Q109
R147 2.2k
+135V REGULATOR OVERLOAD DET.
R254
C219
R269
C225
R256
Q169
Q172
R277
R253
C220
R266
TP151
P.D. (135V)
R272 2.2k
T151
CRT ANODE
10 9 4 3 8 6
G1
D172
R295
C236
R293
T152
Q177
R247
C231
C203
C234
C245
C250
C202
D178
C246
C249
R221
R203
+13.5V
TP151
P.D. (H.DEF)
D163
H. SIGNAL DET.
D155
D156
Q165
R240
R248
R239
C213
C218
R244
R273
D165
X-RAY PROTECTION
R250
R255
Q167
R265
Q170
R274
C201
C216
D158
R264
R268
D153
C226
R297
VR151
R278
E6
U7
12V STB
P.D.
RELAY
TUNER-VIDEO ASSEMBLY
IC451
VDD
64
+5V STB REGULATOR
Q461
R591
R590
5.6V
C992
D455
R585
RELAY
40
Q456
POWER ON L
POWER OFF H
IC302 LA4280P
OUTPUT PIN 11
OUTPUT PIN 13
C482
C481
TO SPEAKERS
R821
R817
+13.5V
TP303
P.D.
R806
R807
Q305
D303
R800
R801
C450
Q306
R814
R813
R810
C455
SPEAKER PROTECTION CIRCUIT
V-AMP ASSEMBLY
V. SIGNAL DET.
R384 470
Q210
R383
C289
(NP)C288
R381
D202
R382
G1
S2
AC PD
V. RETURN
E9
P.D. (V.AC)
TP153
+25V
R303 47k
D187
R263 1.2k
P.D. (X.RAY)
TP152
C260
R323
C261
R314
C255
Q186–Q191
G1
R310
R311
R312
R324
E1
E2
E3
V.DY
V.DY
V.DY
G1

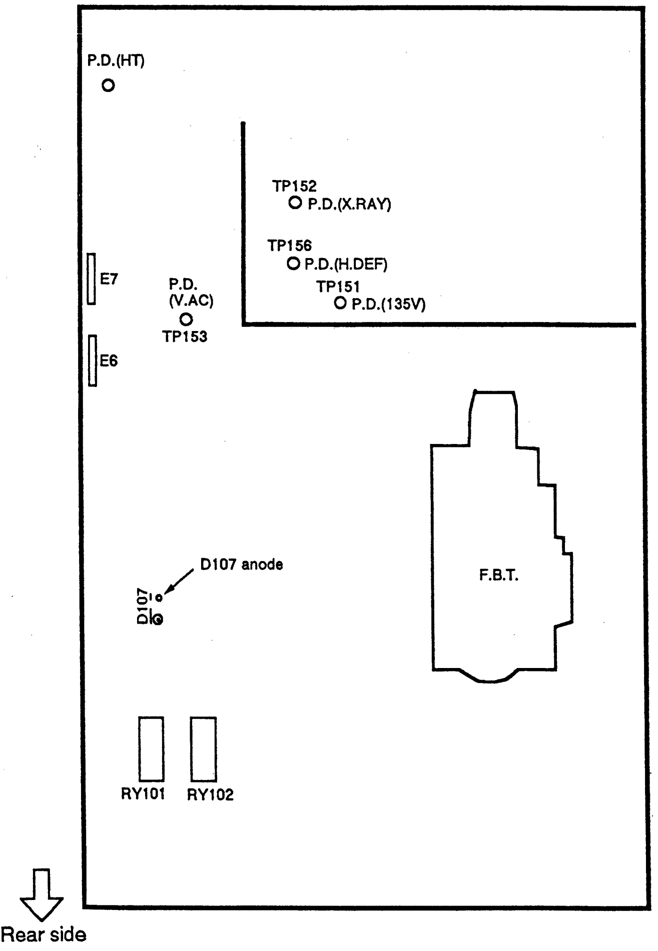
13. HOW TO CHECK POWER DOWN

TP No.	TP Name	Defect assembly	Example of the defect
D107 anode	–	POWER SUPPLY assembly	•Defects in the relay (RY102) circuit.
Q110 collector	P.D.(HT)		•Defects in the Heater regulator circuit (Q109).
TP151	P.D.(135V)		•Short circuit the H.OUT transistor (Q177).
TP152	P.D.(X.RAY)		•Overvoltage as 135V cannot be controlled. •Short circuit the power supply modulation (Q174). (Defects in the self-excited circuit of primary side of power supply.)
TP156	H.DEF.P.D.		•Stop the H.OSC(IC254). •Open circuit the H.OUT transistor (Q177).
TP153	P.D.(V.AC)		•Defects in the waveform generator IC(IC602). •Defects in the V.OUT amp. transistors(Q190, Q191). •Short or open circuit the ± 25V line (FU105, FU106).
TP303	P.D.	TUNER–VIDEO assembly	•Short circuit the output decoupling capacitors (C481, C482).

TUNER-VIDEO Assembly


IC451
TP303
P.D.
U15
TV F.E.

POWER SUPPLY Assembly


P.D.(HT)
TP152
P.D.(X.RAY)
TP156
P.D.(H.DEF)
TP151
P.D.(135V)
E7
P.D.
(V.AC)
TP153
E6
D107 anode
D107
F.B.T.
RY101
RY102
Rear side

14. WIRING DIAGRAM

Reconnect any disconnected lead wires of the Projection monitor receiver.

Figs. 14-1 thru 14-3 show the important points for connection of the lead wires. You may find that they were connected differently. Be sure reconnect the lead wires as they were.

Note : Be careful of the lead wires will not touch the ▨ portion as illustrated below.

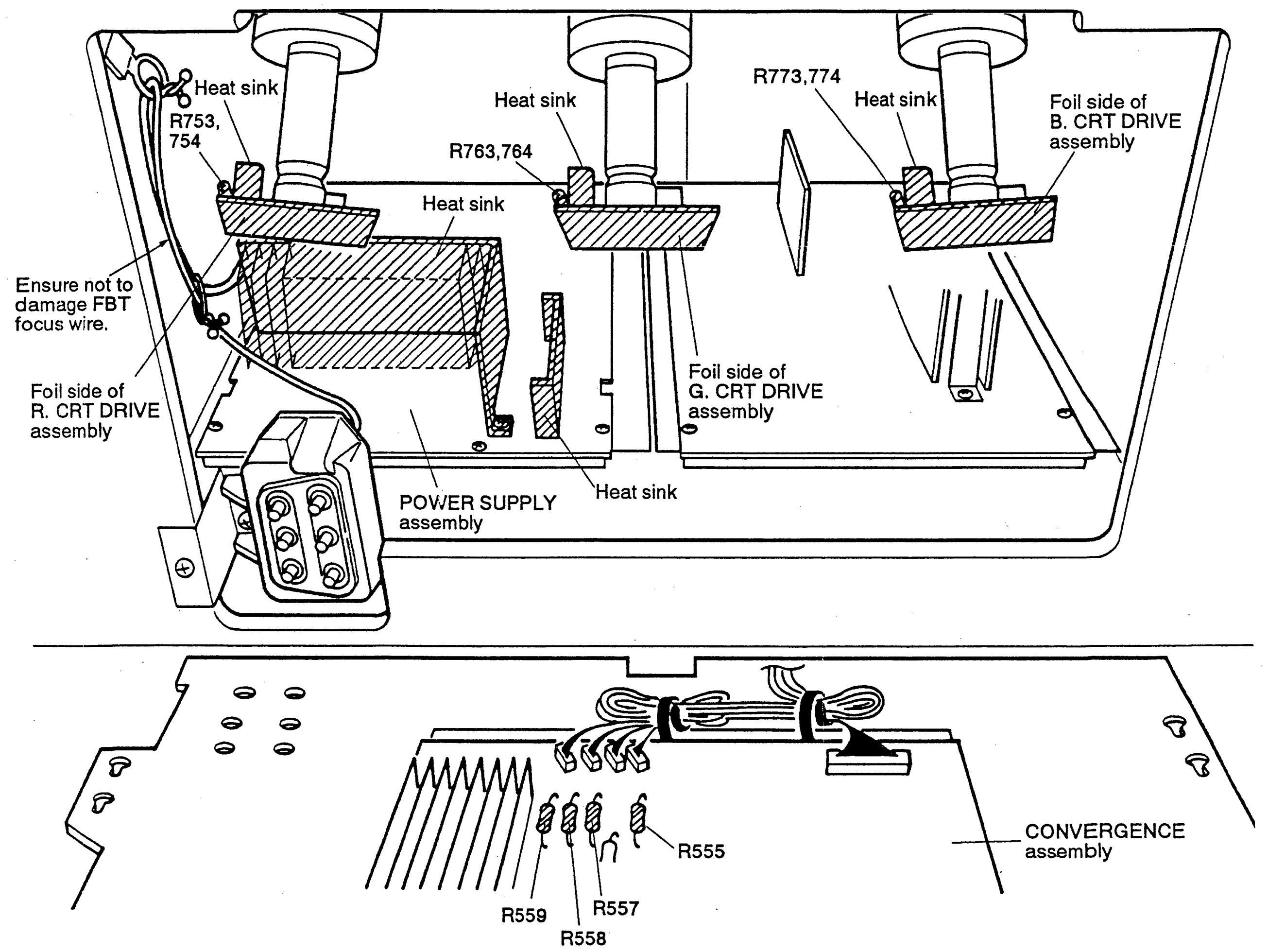
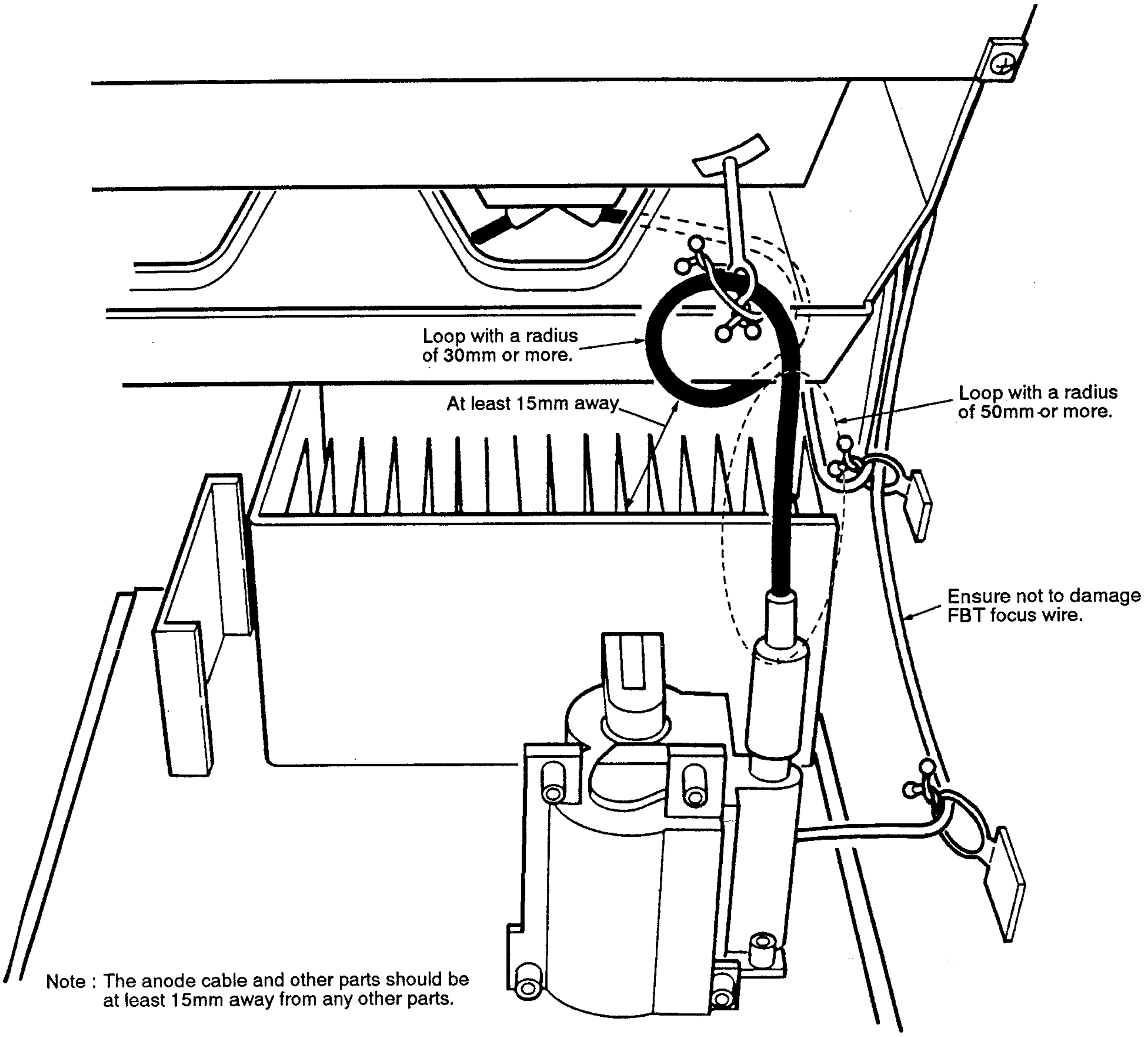
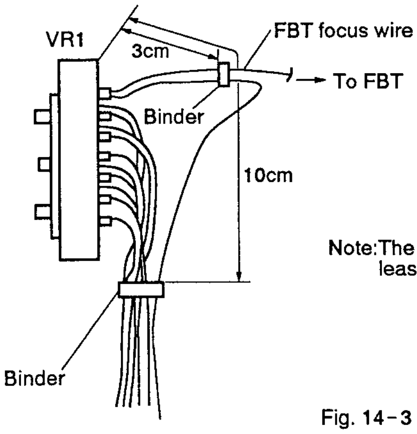

Heat sink
R753, 754
Heat sink
R763,764
Heat sink
R773,774
Heat sink
Foil side of B. CRT DRIVE assembly
Ensure not to damage FBT focus wire.
Foil side of R. CRT DRIVE assembly
Foil side of G. CRT DRIVE assembly
POWER SUPPLY assembly
Heat sink
R555
R559
R557
R558
CONVERGENCE assembly

Fig. 14-1 Wiring Diagram (1)


Loop with a radius
of 30mm or more.
At least 15mm away
Loop with a radius
of 50mm or more.
Ensure not to damage
FBT focus wire.

Note : The anode cable and other parts should be at least 15mm away from any other parts.

Fig. 14-2 Wiring Diagram (2)


VR1
3cm
FBT focus wire
To FBT
Binder
10cm
Binder

Note:The focus terminal and other parts should be at least 15mm away from any other parts.

Fig. 14-3 Wiring Diagram (3)

15. FOR SD–P5071–Q/KUX1C AND SD–P4571–Q/KUX1C

NOTES:

- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *Parts marked by ☆ are important parts which relate to X-rays radiation. If any of these parts need to be replaced, always replace with specified parts.*

15.1 SD–P5071–Q/KUX1C

CONTRAST OF MISCELLANEOUS PARTS

SD–P5071–Q/KUX1C and SD–P5071–K/KUX1C have the same construction except for the following :

Mark	Symbol & Description	Part No.		Remarks
		SD–P5071–K/KUX1C	SD–P5071–Q/KUX1C	
	Upper carton (50)	AHD2540	AHD2609	

15.2 SD–P4571–Q/KUX1C

CONTRAST OF MISCELLANEOUS PARTS

SD–P4571–Q/KUX1C and SD–P4571–K/KUX1C have the same construction except for the following :

Mark	Symbol & Description	Part No.		Remarks
		SD–P4571–K/KUX1C	SD–P4571–Q/KUX1C	
	Upper carton (45)	AHD2538	AHD2608	

PIONEER®
The Art of Entertainment

PROJECTION MONITOR RECEIVER

SD-P5071
SD-P4571

Operating Instructions

NTSC

- **Before use, remove the screen protection sheet (see page 6).**

DEMONSTRATION MODE
With the power of the projection monitor ON, press and hold the DIGITAL P IN P ON/OFF button on the control panel for more than 2 seconds to initiate the demonstration operation. "PIONEER DEMONSTRATION" is displayed for about 2 seconds on the screen, then the picture-in-picture operations start, repeating the subpicture shifting, 4-subpicture display, 9-subpicture display, still picture display, channel scan, etc.

- To end the demonstration, press any operation button on the control panel or remote control unit.

Thank you for purchasing the PIONEER Projection Monitor Receiver.
If you have not read the precautionary instructions enclosed with these operating instructions, please do so before proceeding.
After learning how to operate the Projection Monitor be sure to keep this manual handy for future reference.

While the official name of the product is the "PROJECTION MONITOR RECEIVER", for convenience, the text refers to it as the "Projection Monitor" or, simply, the "Monitor".

Note to CATV system installer:
This reminder is provided to call the CATV system installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground should be connected to the grounding system of the building, as close to the point of cable entry as practicable.

CONTENTS

3 IMPORTANT NOTICE/IMPORTANT
4 PRELIMINARY INSTRUCTIONS
5 FEATURES
6 INSTALLATION
6 OPERATING PRECAUTIONS
7 INSERTING BATTERIES IN THE REMOTE CONTROL UNIT
7 REMOTE CONTROL OPERATION RANGE
8 SYSTEM CONNECTION DIAGRAMS
9 ANTENNA CONNECTIONS
10 FRONT PANEL FACILITIES
12 REMOTE CONTROL UNIT FACILITIES
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20 PICTURE-IN-PICTURE AND CHANNEL SCAN
22 HOW TO ALIGN COLOR CONVERGENCE
25 CHANNEL PRESET
26 PICTURE ADJUSTMENT
27 AV MEMORY
28 HOW TO RELABEL INPUT DISPLAYS
29 TROUBLESHOOTING
30 CARE OF YOUR PROJECTION MONITOR
30 BLOCK DIAGRAM
31 SPECIFICATIONS

OPERATING PRECAUTIONS

DO NOT ALLOW STILL PICTURES OR PARTS OF PICTURES THAT DO NOT MOVE TO REMAIN ON THE SCREEN FOR AN EXTENDED LENGTH OF TIME. STILL IMAGES CAN ADVERSELY AFFECT YOUR PICTURE PROJECTION TUBES. SOME EXAMPLES OF STILL IMAGES ARE COMPUTERS, TELEVISION PROGRAMMING LOGOS AND VIDEO GAMES. IF STILL PICTURES CANNOT BE AVOIDED, REDUCE THE BRIGHTNESS AND CONTRAST LEVELS OF THE PICTURE OR SET PICTURE SETTING TO "GAME POSITION" TO MINIMIZE ANY DAMAGE THAT MIGHT OCCUR.

IMPORTANT NOTICE

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO WET LOCATIONS.

The model number and the serial number of this Projection Monitor are located on the rear panel.
Please write the serial number on the enclosed warranty card and keep it in a safe place for future reference.

NOTE:
There are no user-serviceable parts inside the Projection Monitor.

Notes for the PIP video processing functions
Use of the PIP (Picture-in-Picture) video processing functions provided in this monitor is intended for private viewing only.
Use of the above video processing functions for profitmaking purposes or for public viewing (clubs, hotels, etc.) without prior authorization from the transmitter and/or owner of the video program(s) may be an infringement of existing copyright laws.

IMPORTANT

The lightning flash with arrowhead, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION:
TO PREVENT THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Dear Customer:

Selecting fine audio equipment such as the unit you've just purchased is only the start of your musical enjoyment. Now it's time to consider how you can maximize the fun and excitement your equipment offers. This manufacturer and the Electronic Industries Association's Consumer Electronics Group want you to get the most out of your equipment by playing it at a safe level. One that lets the sound come through loud and clear without annoying blaring or distortion-and, most importantly, without affecting your sensitive hearing.

Sound can be deceiving. Over time your hearing "comfort level" adapts to higher volumes of sound. So what sounds "normal" can actually be loud and harmful to your hearing. Guard against this by setting your equipment at a safe level BEFORE your hearing adapts.

To establish a safe level:
- Start your volume control at a low setting.
- Slowly increase the sound until you can hear it comfortably and clearly, and without distortion.

Once you have established a comfortable sound level:
- Set the dial and leave it there.

Taking a minute to do this now will help to prevent hearing damage or loss in the future. After all, we want you listening for a lifetime.

We Want You Listening For A Lifetime

Used wisely, your new sound equipment will provide a lifetime of fun and enjoyment. Since hearing damage from loud noise is often undetectable until it is too late, this manufacturer and the Electronic Industries Association's Consumer Electronics Group recommend you avoid prolonged exposure to excessive noise. This list of sound levels is included for your protection.

Decibel Level	Example
30	Quiet library, soft whispers
40	Living room, refrigerator, bedroom away from traffic
50	Light traffic, normal conversation, quiet office
60	Air conditioner at 20 feet, sewing machine
70	Vacuum cleaner, hair dryer, noisy restaurant
80	Average city traffic, garbage disposals, alarm clock at two feet.

THE FOLLOWING NOISES CAN BE DANGEROUS UNDER CONSTANT EXPOSURE

90	Subway, motorcycle, truck traffic, lawn mower
100	Garbage truck, chain saw, pneumatic drill
120	Rock band concert in front of speakers, thunderclap
140	Gunshot blast, jet plane
180	Rocket launching pad

Information courtesy of the Deafness Research Foundation.

PRELIMINARY INSTRUCTIONS

WHERE TO PUT THE MONITOR

LIGHTING
Bright lights or direct sunlight will dull the picture. Position the monitor so that the screen faces away from windows.

AIR CIRCULATION
Leave space for air to circulate behind the monitor. Keep it away from curtains and other furnishings that could block ventilation.

HEAT DAMAGE
Damage may occur if you leave the monitor in direct sunlight or near a heater.

OPTIMUM VIEWING DISTANCE
10 to 23 feet is the range recommended for viewing comfort.

POWER SOURCE
This Projection Monitor operates on AC 120 V, standard household voltage.

NEVER CONNECT THE PROJECTION MONITOR TO OTHER THAN THE SPECIFIED VOLTAGE, OR TO DIRECT CURRENT.

POWER OUTLET

- This monitor requires an AC 120 volt polarized outlet. The plug will fit only one way. If it will not go in, turn it around and try the other way. If you are still unable to insert the plug, call an electrician to replace the wall socket.
- A damaged cord or plug is a fire hazard. If you notice wear or damage, have it fixed by qualified service personnel.
- Plug directly into the wall socket. Do not use extension cords or other receptacles. Do not overload the outlet; it is a fire hazard.

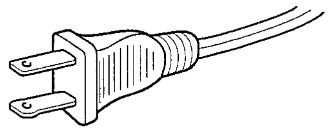
NOTE:
Never remove the back cover of the Projection Monitor as this will expose you to dangerously high voltage and other hazards. If the monitor does not operate properly, unplug it and refer to pages 29 and 30.

POWER-CORD CAUTION
Handle the power cord by the plug. Do not pull out the plug by tugging the cord and never touch the power cord when your hands are wet as this could cause a short circuit or electric shock. Do not place the unit, a piece of furniture, etc., on the power cord, or pinch the cord. Never make a knot in the cord or tie it with other cords. The power cords should be routed such that they are not likely to be stepped on. A damaged power cord can cause fire or give you an electrical shock. Check the power cord once in a while. If you find it damaged, ask your nearest PIONEER authorized service center or your dealer for a replacement.

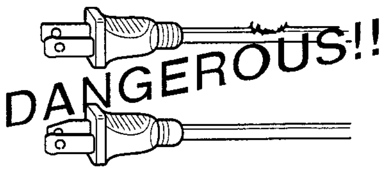
[For Canadian model with the polarized plug]
CAUTION: TO PREVENT ELECTRIC SHOCK DO NOT USE THIS (POLARIZED) PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

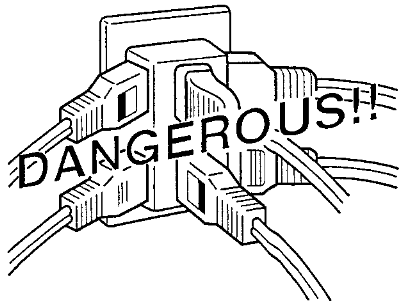
[Pour le modèle canadien avec la fiche polarisée]
ATTENTION: POUR PREVENIR LES CHOCS ELECTRIQUES NE PAS UTILISER CETTE FICHE POLARISEE AVEC UN PROLONGATEUR, UNE PRISE DE COURANT OU UNE AUTRE SORTIE DE COURANT, SAUF SI LES LAMES PEUVENT ETRE INSEREES A FOND SANS EN LAISSER AUCUNE PARTIE A DECOUVERT.

- POLARIZED PLUG



- DANGEROUS





FEATURES

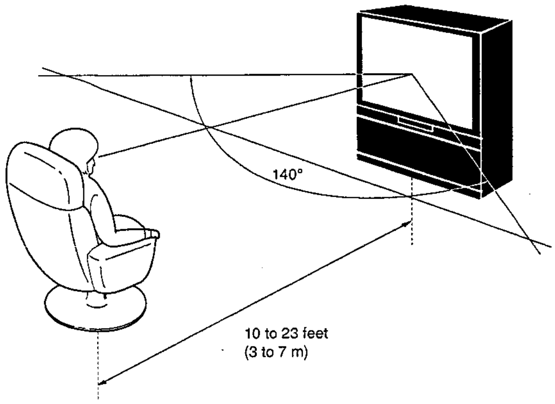
Sharp, Clear Images with 830 line (SD-P5071)/770 line (SD-P4571) Horizontal Resolution (Video input)

- A 10 MHz video bandwidth and Dynamic Picture Control circuitry provide sharp, detail and crisp outlines.
- Dynamic focusing circuit enhances resolution at picture edges.

Wide Viewing Range Screen

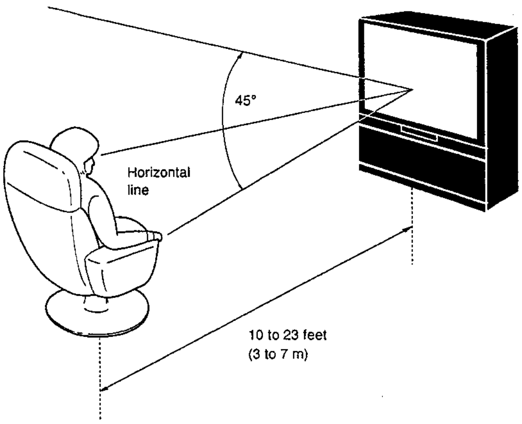
- 140° Horizontal Viewing Angle and 45° Vertical Viewing Angle.

Best Horizontal Viewing Angle



Best Vertical Viewing Angle

Watch from at least 10 feet (3 m) away from the screen. (Optimum viewing distance is 10 to 23 feet.)



You may sometimes see double images or rainbowlike effects if you view from outside of the recommended area shown here.

PIONEER-Original, *Cinema Wide System*

- A feeling of wide field of view is obtained through picture reproduction on a PIONEER new wide screen by means of a partial stretching technique.

Amazingly Bright Picture Intensity of 520 (SD-P5071)/640 (SD-P4571) Foot-Lambert

- New, highly efficient lens system passes more light.
- High-power picture tubes employ advanced anode stabilization circuitry and 6000 pF capacitors.
- Newly developed phosphorescent screen for the picture tubes.
- Improved luminance with the SLD (Surface Layer Diffusion) black screen.

AV Memory

- After adjusting the picture quality, you can store your settings in "AV memory". Two AV memory settings can be stored and recalled.

High-Fidelity Color Reproduction and Brighter Whiteness Produced by a Newly Developed Linear White Circuit

- The linear white circuit adjusts the blue phosphor characteristics and aligns the Red, Green and Blue drive circuits. This allows the monitor to reproduce brighter whites and natural fresh colors.

Built-In Closed Caption Decoder

- When character-multiplexed broadcasting (closed caption broadcasting) is received, characters such as the lines of actors can be superimposed on the screen (caption mode) or character information can be displayed on the full screen (text mode).
- When a video cassette or LaserDisc carrying the CC mark etc. is played, the multiplexed character information can be decoded and displayed on the screen.

INSTALLATION

ANTENNA CONNECTION

Connect to an outdoor antenna, cable box or centralized antenna terminal (see page 9 for details).

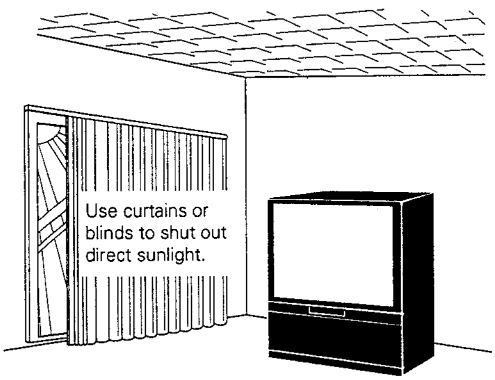
MOUNTING

The Projection Monitor is designed to be placed on the floor or on a sturdy platform. The mounting surface should be flat and steady.

INSTALLATION PRECAUTIONS:

Place of Installation

- *When the Projection Monitor is operating, it is cooled by airflow through ventilation holes in the rear and bottom. Therefore, avoid placing it in a location where the cooling air-flow is hindered (e.g. against a wall).*
- *Avoid places subject to extremely high temperatures or humidity, or to temperatures of 41°F (5°C) or lower. Also avoid dusty places.*
- *Do not set the Projection Monitor in an unstable location (such as on a shaky or tilted platform).*
- *If setting the Projection Monitor on a floor made of soft material, make sure that the floor will not be damaged by the weight of the Projection Monitor.*


Use curtains or blinds to shut out direct sunlight.

Downward spot lights or fluorescent lights in an overhead "Honeycomb" prevent direct illumination of the screen.

Cover shiny surfaces (floor and walls) with nonreflective materials (carpet, rugs, wallpaper, etc.).

OPERATING PRECAUTIONS

Keep away from magnetic fields

The picture may be distorted if strong magnetic fields are nearby. External speakers should be set at least 2 feet (60 cm) away from the Projection Monitor. Electric fans and other motor driven appliances and toys may also be sources of magnetism.

When moving the monitor

Pull out the plug and move the monitor carefully. Be particularly careful not to bump or scratch the screen. To avoid damage to the caster wheels you may need to lift the monitor when going over irregular surfaces.

Install in a flat, steady place

Do not put the Projection Monitor on a surface that is tilted, unsteady or prone to shake or vibrate. A shaky or slanted platform is dangerous.

Adjust room illumination

Excessively bright or dim lighting may strain your eyes. Draw the curtains if necessary to shut out direct sunlight.

When not using the monitor for a long time

For safety, unplug the power cord when leaving the monitor turned off for a long period of time.

Condensation and picture blurring

- If the room temperature suddenly rises (or if the Projection Monitor is moved from a cool place to a hot place), condensation may form on the lenses resulting in picture distortion or color fading. If this occurs, simply wait a while (with the power switch ON) and the condensation will disappear.
- A gradual change in temperature can prevent condensation from forming.

A word about still pictures

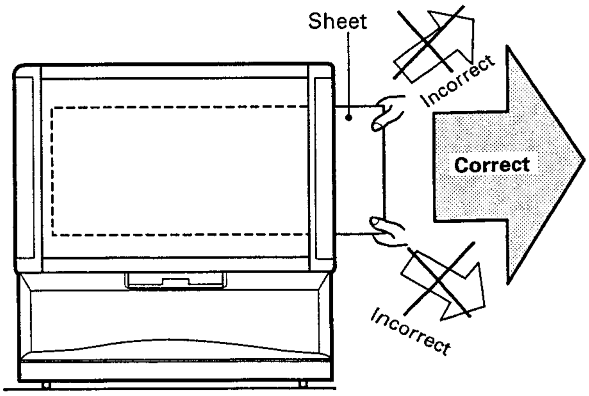
- Do not project a still picture on your Monitor for a long period of time.
  (For example: when using your Monitor for video games, monitoring your personal computer, or while playing back videodiscs.) This can adversely affect the monitor's CRT. If this cannot be avoided, reduce the brightness and contrast of the picture or set picture setting to "GAME POSITION" in order to minimize any damage which might occur.

Before use, remove the screen protection sheet.

- Hold the edges of the sheet with both hands and pull it out straight, slowly, in the direction of the arrow.

CAUTION:

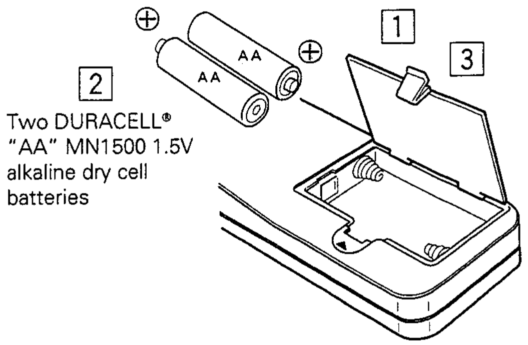
Do not pull the sheet at an angle.



INSERTING BATTERIES IN THE REMOTE CONTROL UNIT

You will find the remote control unit packed inside the projection monitor box. Open the remote control unit and insert the batteries. Follow the procedure below:

1. Open the battery compartment on the rear of the remote control unit.
2. Note the polarity (+ and –) markings in the case. Insert the supplied batteries so that they match the markings.
3. Close the lid until it clicks into place.



Two DURACELL® "AA" MN1500 1.5V alkaline dry cell batteries

Incorrect use of batteries may lead to leakage or rupture. Always be sure to follow these guidelines:

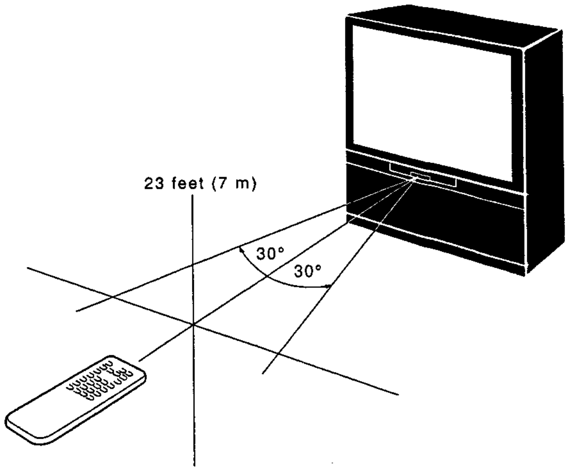
A.
Always insert batteries into the battery compartment correctly matching the positive + and negative – polarities, as indicated inside the compartment.

B.
Never mix new and used batteries.

C.
Batteries of the same size may have different voltages depending on their type. Do not mix different types of batteries.

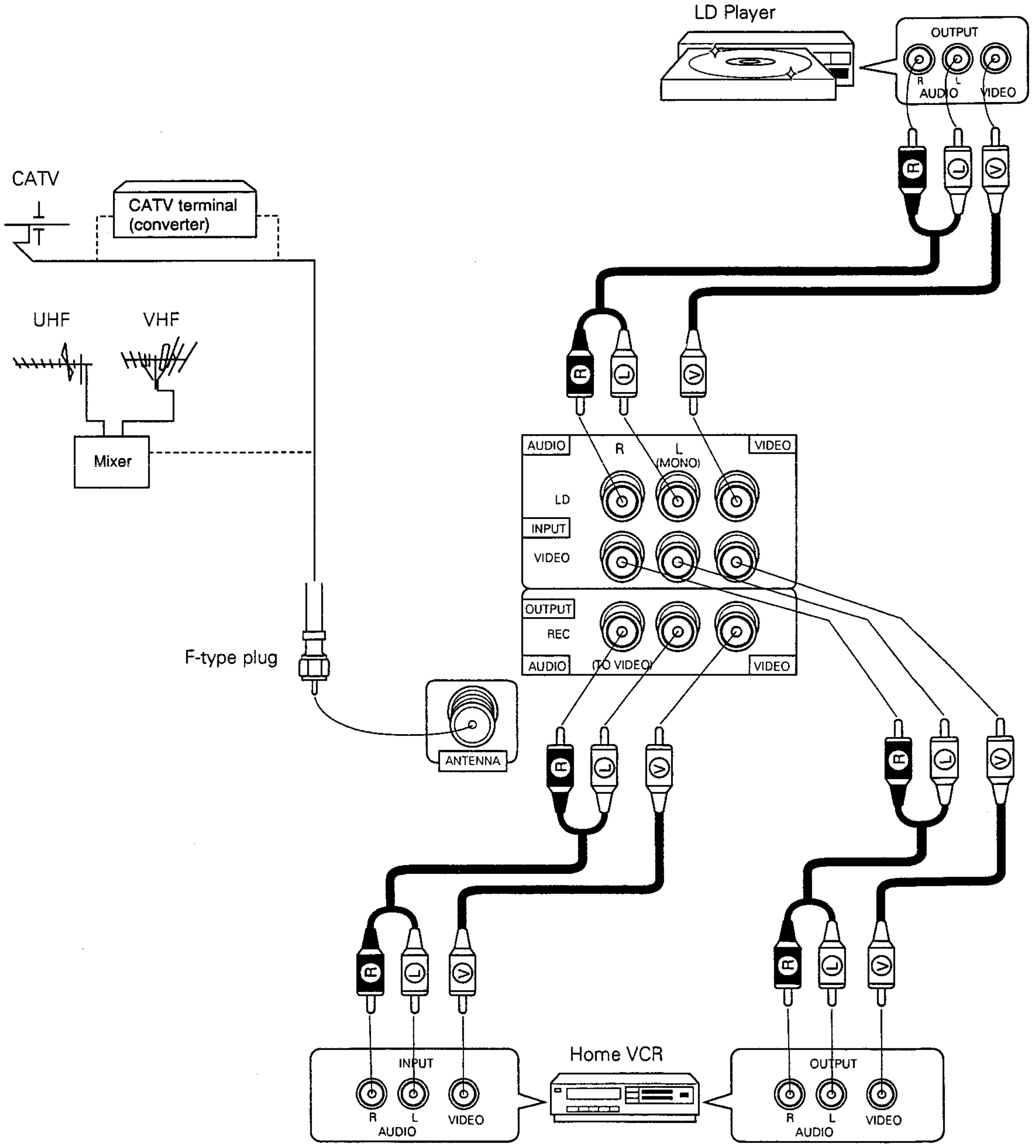
REMOTE CONTROL OPERATION RANGE

- Point the remote control unit toward the front of the Projection Monitor when you press any of the control buttons.
- The remote control unit should be effective at distances of up to about 23 feet (7 m) from the Projection Monitor and at angles of up to about 30 degrees from a line perpendicular to the front panel.
- Furniture and other obstacles may block the infrared light beam so that it cannot reach the sensor on the Projection Monitor's front panel.
- If there is no response even when the remote control is used directly in front of the monitor, the dry cell batteries may need replacement.
- Performance of the remote control unit is adversely affected by strong fluorescent light. Keep such lights away from the sensor window in particular.



SYSTEM CONNECTION DIAGRAMS

Refer to the instructions for your VCR and LD Player for details concerning connections.
Turn off all components before making connections.


LD Player
OUTPUT
R
L
AUDIO
VIDEO
CATV
CATV terminal (converter)
UHF
VHF
Mixer
F-type plug
ANTENNA
AUDIO
R
L (MONO)
VIDEO
LD
INPUT
VIDEO
OUTPUT
REC
AUDIO
(TO VIDEO)
VIDEO
Home VCR
INPUT
R
L
AUDIO
VIDEO
OUTPUT
R
L
AUDIO
VIDEO

INPUT jacks

There are 2 sets of inputs for video sources (VCR and LD Player). Use RCA-type pin plug cords (the same as those used in hi-fi systems) for connections. When the audio source to be connected is monaural, connect the source to the L-(MONO) jack.

OUTPUT TO VIDEO REC-jacks

These are used for connecting the monitor to a VCR for recording, or for linking it to another monitor. These jacks output the video and audio signals of the source currently selected by the TV/LD. Connect these output jacks to your VCR's inputs. Connect the VCR's outputs to the monitor's VIDEO inputs.

ANTENNA CONNECTIONS

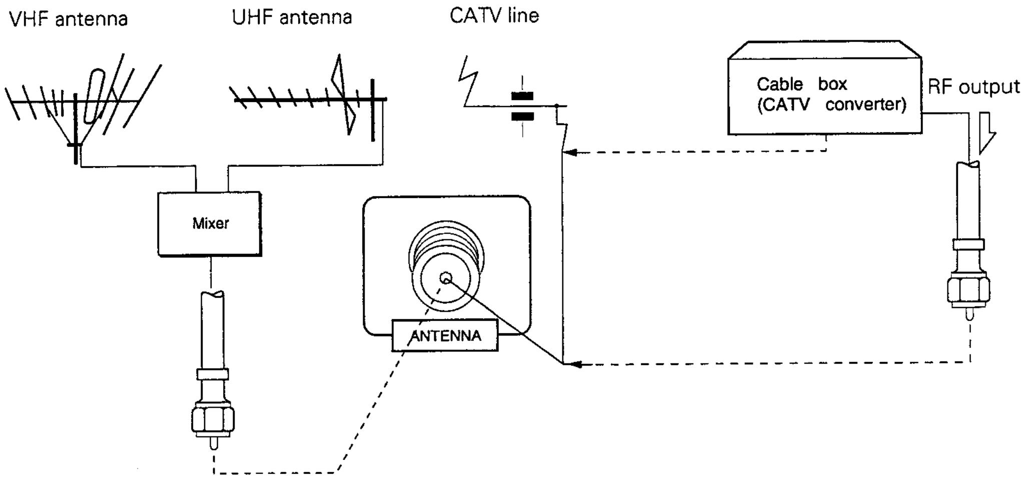
A good color picture depends on a good TV signal. So does good multichannel (stereo and SAP) sound. To ensure the highest signal quality, choose an antenna that suits your reception area and have it properly installed. Ask your dealer for advice.

If you subscribe to cable or have a central antenna for your building, then you will not need an external antenna. However, proper connections from the TV signal source to your monitor are essential. Please refer to the instructions below.

USING THE ANTENNA CABLE CONNECTOR

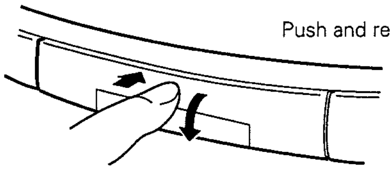
The cable connector plugs into the monitor's antenna terminal. This monitor is designed to be connected to a 75 ohm coaxial cable using an F-type plug.

Connect the cable box RF output cable or the antenna cable connector into the ANTENNA terminal.

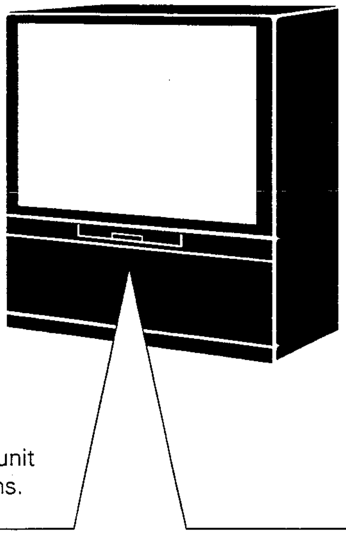


FRONT PANEL FACILITIES

A flip-down door conceals the control panel. Push gently and release to open the door.
To close the door, lift it back up into place.



NOTE:
If you accidentally pull the door, it may not shut properly. Push in when shutting the door to restore it to normal operation.



Control Panel
Use the remote control unit to operate most functions.

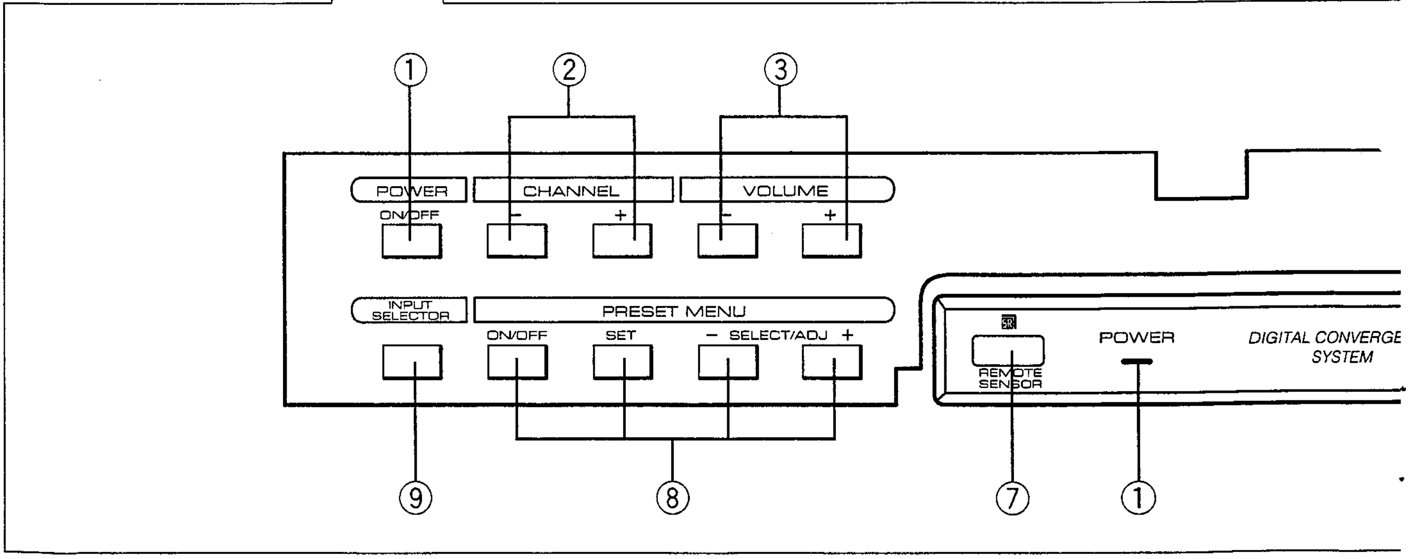
① **POWER switch and indicator**
Press once to turn on the power. Press again to turn the power off. The POWER indicator lights up when the power is on.

② **CHANNEL buttons**
Press plus (+) or minus (–) to tune to a higher or lower channel. Only those channels in channel preset can be tuned in by this method. For details, see page 25.

③ **VOLUME buttons**
Press the plus (+) or minus (–) button to raise or lower the volume.

④ **STD/AV MEM (Standard/AV Memory/GAME POSITION) button**
Press to switch the standard (STD) picture settings and the AV MEMORY 1 and AV MEMORY 2 (settings which have been input with the MENU SET button) and GAME POSITION.

⑤ **DIGITAL P IN P (Picture-in-Picture) buttons**
ON/OFF: Press to turn the Picture-in-Picture function on and off.
INPUT: Press to select the input source for the subpicture while in one-subpicture mode.
- For details on the Picture-in-Picture function, see page 20.



ATTENTION
The Projection Monitor Receiver will not function properly in the following cases:
- Lightning storms.
- High static electricity environment.
- Poor voltage regulation in the power source.

If the Projection Monitor does not operate properly, reset it as follows:
1. Unplug from the power supply for approximately 1 minute.
2. Plug the power cord in again to reset it.

NOTES:
- *When the P IN P ON/OFF button is pressed and held for more than 2 seconds, the Projection Monitor will go into its demonstration mode.*
- *The demonstration mode will be cancelled if any other operation button is pressed; and the Projection Monitor will enter the selected operation mode.*

⑥ RETURN button

Press to set the Projection Monitor to its initial mode instantly if either sound or picture disappear from the speaker system or the screen during adjustment.
- Adjust the Projection Monitor again after pressing the RETURN button, as all settings have been cleared.

When the RETURN button is pressed, the Projection Monitor is set as follows:

PICTURE:	Parameters, set to 0.
VOLUME:	Remains at the last setting.
P-in-P/SLEEP:	Set to OFF.
INPUT SELECTOR:	Set to TV.
TV CHANNEL:	Remains at the last channel set.
MTS:	Remains at the last setting.
CC:	CC-OFF, C1, F1, BLACK BACKGROUND

⑦ REMOTE SENSOR

This sensor picks up infrared signals from the remote control unit.

⑧ PRESET MENU buttons

These buttons are used to perform the following functions: color convergence, channel presetting, TV-CATV selection, relabeling input label, system mode setting and AV memory storage. For details, refer to the description of each function.

ON/OFF: Press to turn the Menu (functions above) on and off. When the button is pressed on, the function names CONVERGE, AV MEMORY, INPUT LABEL, TV-CATV MODE and CHANNEL PRESET are displayed on the screen.

SELECT/ADJ (+/–): Press to select the desired function. The selected function is displayed in purple.

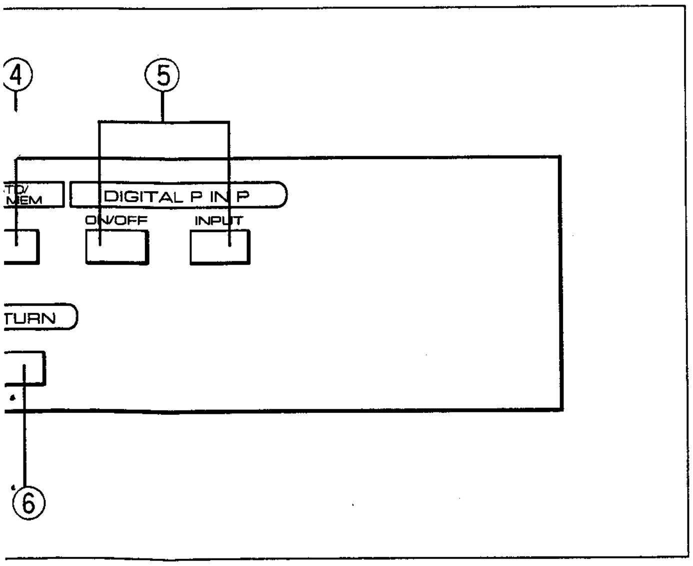
SET: Press to activate the selected function.

⑨ INPUT SELECTOR button

Press to select your program source: TV, LD player or VIDEO. Each press of the button changes the selection to the next source.

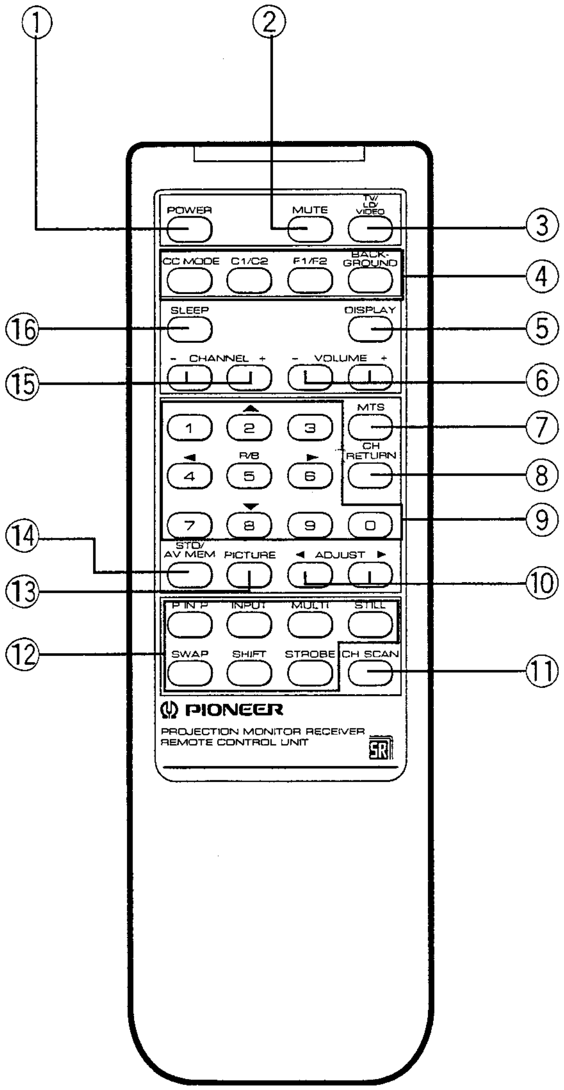
NOTE:

On rare occasions, an electrical discharge may occur inside the CRT. It makes a short, sharp pop and either no sound is produced or the volume level changes by itself. The Picture-in-Picture function will be cancelled automatically if an electrical discharge occurs when this function is engaged.



REMOTE CONTROL UNIT FACILITIES

Caution:
Do not press any operation button on the Projection Monitor or on the remote control unit while recording is in progress. Signals from the REC jacks may be interrupted shortly, when an operation button is pressed.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⑯
POWER
MUTE
TV/LD/VIDEO
CC MODE
C1/C2
F1/F2
BACK-GROUND
SLEEP
DISPLAY
– CHANNEL +
– VOLUME +
MTS
1
2
3
R/B
CH RETURN
4
5
6
7
8
9
0
STO/AV MEM
PICTURE
◄ ADJUST ►
P IN P
INPUT
MULTI
STILL
SWAP
SHIFT
STROBE
CH SCAN
PIONEER
PROJECTION MONITOR RECEIVER
REMOTE CONTROL UNIT

① **POWER button**
Turns the power of the monitor on and off.

② **MUTE button**
Press to temporarily turn off the sound. Press again to return to the previous volume level. This is useful, for example, when answering the telephone.
The volume display will turn red while the mute function is engaged and will disappear from the screen when the mute function is cancelled. If the mute function is left on for over approx. 8 minutes, the function will be cancelled automatically, and the volume level will be reset to 0.

③ **Input selector button (TV/LD/VIDEO)**
Press to select your program source: TV, LD player or VIDEO. Each press of the button changes the selection to the next source.

④ **Closed Caption buttons**
CC MODE: Press to select the closed caption character display mode.

→ CAPTION → TEXT → CC OFF

C1/C2: Press to switch the closed caption channel alternately.
CHANNEL 1 ←→ CHANNEL 2

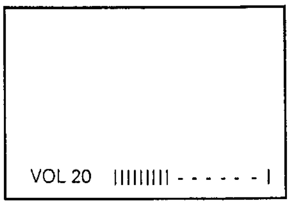
F1/F2: Press to switch the closed caption field alternately.
FIELD 1 ←→ FIELD 2

BACKGROUND: Press to switch the closed caption background alternately.
BLACK BACKGROUND ←→ PICTURE

For details, see page 19.

⑤ **DISPLAY button**
Press once to display the current channel and/or other information on the screen.
The display will disappear from the screen after 2 seconds.

⑥ **VOLUME +, – buttons**
Press the + button to increase the volume, and the – button to decrease it. Volume adjustment will appear on the screen as numbers and a bar graph. '63' indicates the maximum volume level.
The display will disappear from the screen after 2 seconds.
* Volume display will change color automatically according to the selected input mode.


VOL 20 IIIIIIII - - - - - - I

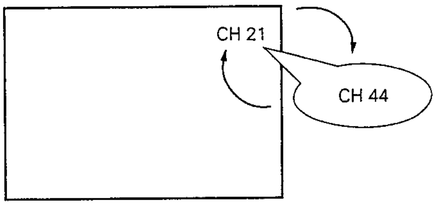
⑦ MTS (Multichannel TV Sound) button

Press to select the reception mode for multichannel TV.

→ MAIN → SAP → MAIN/SAP → MONO

⑧ CH RETURN (Channel return) button

Press to switch between the current channel and the channel you were watching immediately before. This is useful, for example, if you wish to switch back and forth between two sporting events.



⑨ Direct Channel Selection/Color Convergence buttons

Press the button (or buttons) that correspond to the channel that you wish to watch, to switch directly to that channel from any other channel.
The ②, ④, ⑤, ⑥ and ⑧ buttons are also used for color convergence operation. For details, see page 22.

⑩ ADJUST buttons

Press the ► button to increase the value of the item currently selected using the PICTURE button, and the ◄ button to decrease it.

⑪ CH SCAN (Channel scan) button

Press to display 4 (or 9) memorized TV stations on the split screen at the same time. After pressing the CH SCAN button, use the MULTI button to select 4-station display mode or 9-station display mode.

Channel Scan Features

When 4-subpicture or 9-subpicture mode is selected, use this feature to select one of the television stations currently displayed for full-screen viewing.

Press the direct channel selection buttons that correspond to the channel that you wish to watch.

NOTE:

In cases where the transmission from the broadcasting station has stopped or you have selected a channel without a broadcasting station, either a noise screen or the transmission of the last station received will appear on the screen, when channel scan feature is engaged.

⑫ Picture-in-Picture Control buttons

Any program source connected to the Projection Monitor can be displayed on the screen simultaneously with any other source. Also, the multipicture mode (4-subpicture or 9-subpicture) can be selected.

P IN P:	Press to turn the Picture-in-Picture function on and off.
INPUT:	Press to select the input source for the subpicture while in one-subpicture mode.
MULTI:	Press to select the number of subpictures which appear on the screen (1, 4 or 9).
SWAP:	When only one subpicture is displayed, press to exchange the position of the main picture and subpicture.
SHIFT:	Press to move the subpicture to a different place on the screen.
STROBE:	Press to select the strobe feature. Be sure to select the multipicture mode (4-subpicture or 9-subpicture) using the MULTI button.
STILL:	Press to select still screen or normal mode.

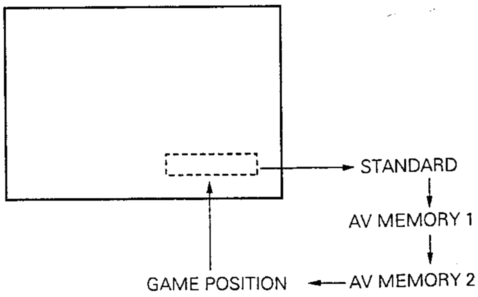
⑬ PICTURE button

Press to select the picture parameter to be adjusted.

→ COLOR → TINT → CONTRAST
SHARPNESS ← BRIGHTNESS ←

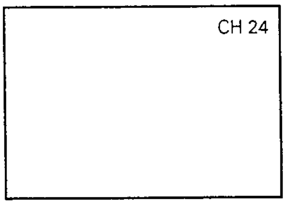
⑭ STD/AV MEM (Standard/AV Memory/GAME POSITION) button

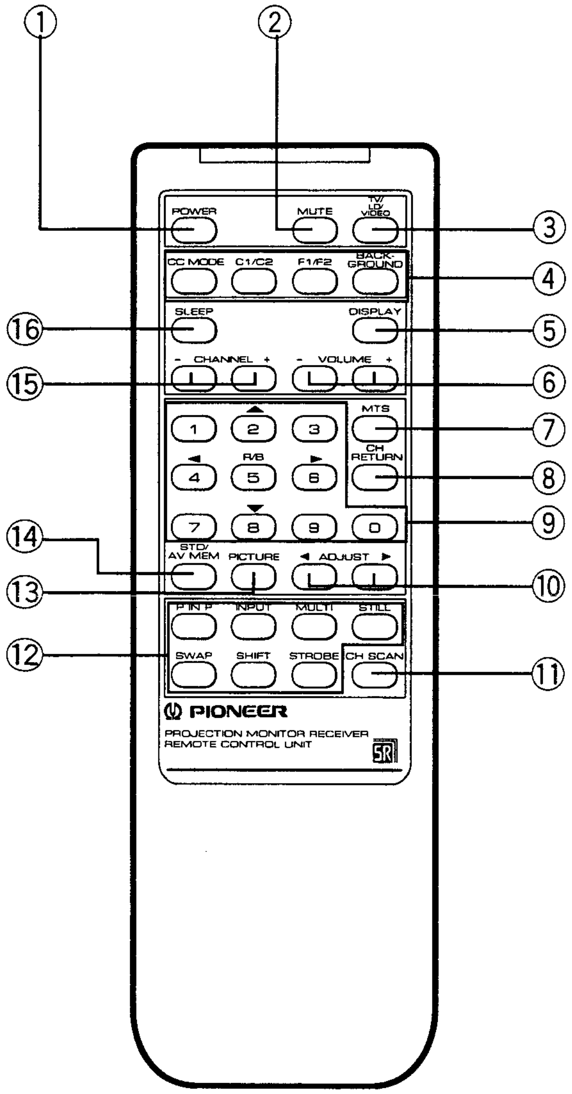
Press to switch between the standard (STD) picture quality settings and your AV MEMORY 1 and AV MEMORY 2 and GAME POSITION settings.
This button recalls settings stored in AV MEMORY and GAME POSITION. To put the current picture settings into AV MEMORY, use the control panel's PRESET MENU buttons. For details, see pages 26 and 27.



⑮ CHANNEL +, – buttons

Press the + or – button to scan up or down among the channels in tuner preset.

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⑫
⑬
⑭
⑮
⑯
POWER
MUTE
TV/LD/VIDEO
CC MODE
C1/C2
F1/F2
BACK-GROUND
SLEEP
DISPLAY
- CHANNEL +
- VOLUME +
MTS
1
2
3
R/B
4
5
6
CH RETURN
7
8
9
0
STD/AV MEM
PICTURE
◄ ADJUST ►
P IN P
INPUT
MULTI
STILL
SWAP
SHIFT
STROBE
CH SCAN
PIONEER
PROJECTION MONITOR RECEIVER
REMOTE CONTROL UNIT
SR

⑯ SLEEP button

Press to set the sleep timer.

The switching sequence is 90, 60, 30 (in minutes) and OFF (cancel). The screen will confirm your setting and the Projection Monitor will shut down when that amount of time has elapsed.

The POWER OFF display will appear on the screen approximately 1 minute before power turns off. The POWER OFF display will flash red until the power is turned off.

→ SLEEP OFF → SLEEP 90 → SLEEP 60 ┐
└ SLEEP 30 ←

Each time the SLEEP button is pressed, the sleep time decreases in intervals of 30 minutes (OFF → 90 → 60 → 30).

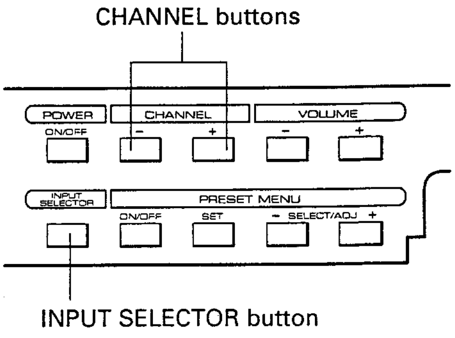
When the SLEEP button is held down, the sleep time decreases in one minute intervals. For example, to set sleep time to 40 minutes: Press the SLEEP button twice ('90' is displayed). Press the SLEEP button again and hold it ('60' is displayed briefly, then the display decreases in 1 minute intervals: 59, 58, 57, ..., etc.). Release the SLEEP button when the display reads '40'.

NOTE:

To cancel the sleep time which has been set, turn off the power once to reset the timer.

TV CHANNEL SELECTION

The Projection Monitor uses a frequency synthesizer tuning system to permit reception of up to 127 channels (including cable channels). This electronic tuning system provides two ways of selecting channels.
You can use the remote control buttons numbered "0" through "9" to directly input the channel number. Or you can use the two CHANNEL buttons marked "+" and "–" on the remote control unit or control panel to select one channel after another. In the latter case, you can remove or add channels to "CHANNEL PRESET" so that it contains only those channels that you usually watch.
The 127 possible channels include broadcast TV channels 2-13 (VHF), 14-69 (UHF), as well as cable (CATV) channels 1-13 (VHF), 14-22 (mid-band), 23-36 (super-band), 37-65 (hyper-band), and 94-99 (mid-band).

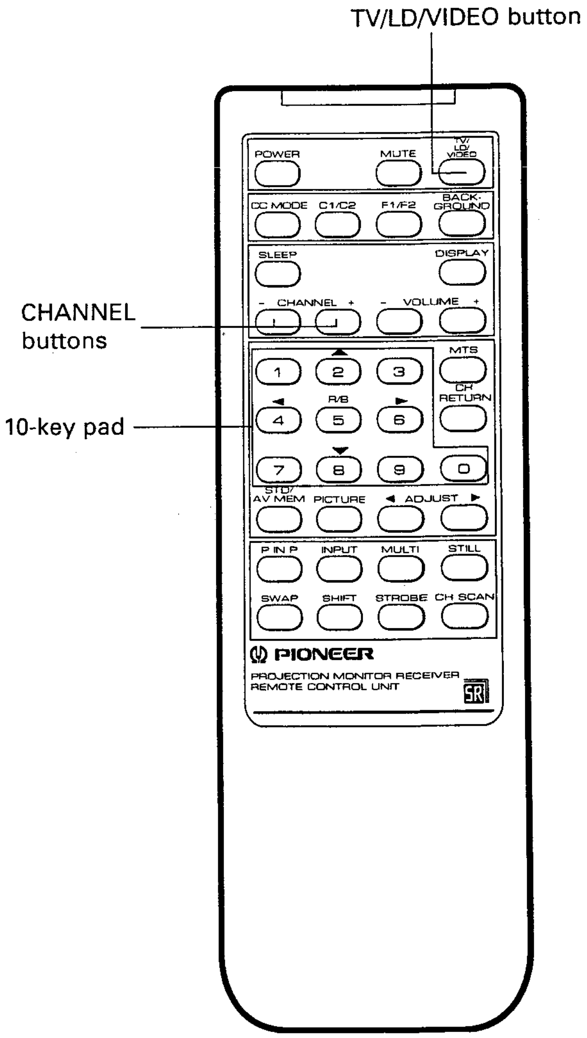

CHANNEL buttons
POWER
ON/OFF
CHANNEL
– +
VOLUME
– +
INPUT SELECTOR
PRESET MENU
ON/OFF
SET
– SELECT/ADJ +
INPUT SELECTOR button

NOTE:
CHANNEL PRESET refers to channel access by pressing the CHANNEL buttons marked "+" and "–". You can specify which channels are to be included in CHANNEL PRESET before using this function. Details follow.

BROADCAST TV CHANNEL SELECTION (When the VHF/UHF antenna is connected to the ANTENNA terminal on the rear panel.)

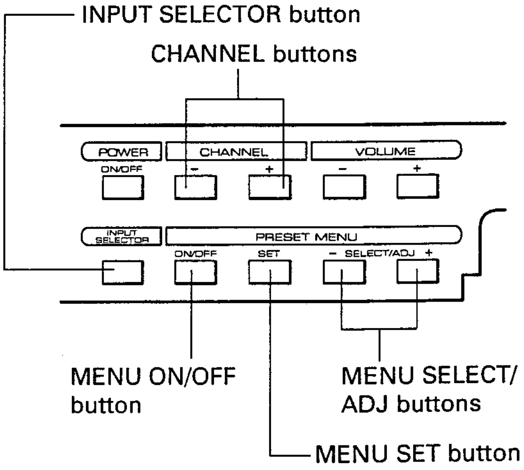
1. **Press the INPUT SELECTOR button on the control panel or the TV/LD/VIDEO button on the remote control unit so that "CHXX" appears on the monitor screen.**
2. **Select channels directly by pressing the channel number on the remote control 10-key pad.**
   For example, to receive channel "23", press 2 and then 3. For channel 1 through 9, first press 0 (zero), then the number; or just press the number and wait for about 2 seconds. (While waiting for you to input a second digit, the first digit blinks. If you do not input a second digit, within 2 seconds, then the first digit is selected as the channel number.)
3. **Channel memory selection is also possible.**
   Using the CHANNEL buttons marked "+" and "–" on the remote control unit or control panel you can scan through the channels which are in channel preset. To add or delete channels in memory, see CHANNEL PRESET on page 25.

NOTE:
Cancel the nonbroadcasting station channels from the memory of the Projection Monitor, before selecting channels.


TV/LD/VIDEO button
CHANNEL buttons
10-key pad
POWER
MUTE
TV/LD/VIDEO
CC MODE
C1/C2
F1/F2
BACK-GROUND
SLEEP
DISPLAY
– CHANNEL +
– VOLUME +
MTS
1
2
3
CH RETURN
R/B
4
5
6
7
8
9
0
STD/AV MEM
PICTURE
◄ ADJUST ►
P IN P
INPUT
MULTI
STILL
SWAP
SHIFT
STROBE
CH SCAN
PIONEER
PROJECTION MONITOR RECEIVER REMOTE CONTROL UNIT

PRESETTING YOUR CATV SYSTEM (When the cable box output is connected to the ANTENNA terminal on the rear panel.)

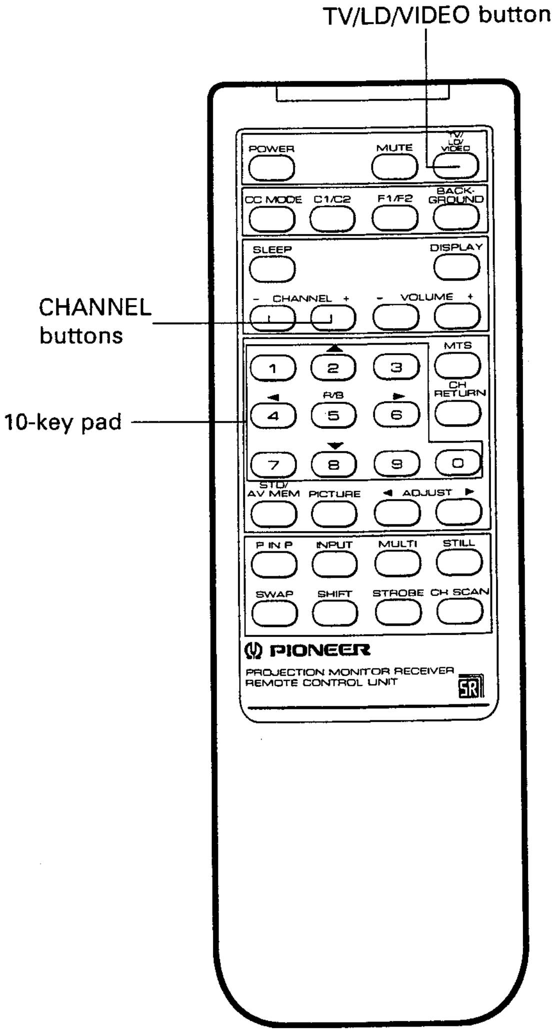
1. **Press the INPUT SELECTOR button on the control panel or the TV/LD/VIDEO button on the remote control unit so that "CHXX" appears on the monitor screen.**
2. **Turn on the menu with the MENU ON/OFF button and press the MENU SELECT/ADJ buttons so that the TV-CATV MODE display turns purple.**
3. **Select "STD (standard)" or "HRC" with the MENU SET button.** (Ask your dealer or cable service provider which is correct for your local CATV system.) Each press of the MENU SET button moves the selection from AIR to STD, to HRC, and then back to AIR again. The displayed mode ("STD" or "HRC") is now preset in the ANTENNA memory, so you can receive your local CATV broadcast when the TV is turned on.
4. **Press the MENU ON/OFF button to return to normal operation.**


INPUT SELECTOR button
CHANNEL buttons
POWER
ON/OFF
CHANNEL
–
+
VOLUME
–
+
INPUT SELECTOR
PRESET MENU
ON/OFF
SET
– SELECT/ADJ +
MENU ON/OFF button
MENU SELECT/ ADJ buttons
MENU SET button

CABLE (CATV) CHANNEL SELECTION

It is necessary to preset your local CATV system in ANTENNA memory. To preset your CATV system, see "PRESETTING YOUR CATV SYSTEM".

1. **Press the INPUT SELECTOR button on the control panel or the TV/LD/VIDEO button on the remote control unit so that "CHXX" appears on the monitor screen.**
2. **Select channels directly by pressing the channel number on the remote control 10-key pad.**
   For example, to receive channel "23", press 2 and then 3. For channels 1 through 9, first press 0 (zero), then the number; or just press the number and wait for about 4 seconds. Note that channel numbers "00", and "66" through "93" are not assigned, so the selected channel will not change if you input these numbers.
   You can select VHF channels (1-13), mid-band channels (A1-A6, A-I), super-band channels (J-W), and hyper-band channels (AA-CCC). Refer to the standard cable channel assignment table shown on page 17. Your local cable service channel assignments may differ from those shown in the table.
3. **Channel memory selection is also possible.**
   Using the CHANNEL buttons marked "+" and "–" on the remote control unit or control panel you can scan through the channels in channel memory. To add or delete channels from memory, see CHANNEL PRESET on page 25.


TV/LD/VIDEO button
CHANNEL buttons
10-key pad
POWER
MUTE
TV/LD/VIDEO
CC MODE
C1/C2
F1/F2
BACK-GROUND
SLEEP
DISPLAY
– CHANNEL +
– VOLUME +
MTS
1
2
3
R/B
CH RETURN
4
5
6
7
8
9
0
STD/AV MEM
PICTURE
◄ ADJUST ►
P IN P
INPUT
MULTI
STILL
SWAP
SHIFT
STROBE
CH SCAN
PIONEER
PROJECTION MONITOR RECEIVER REMOTE CONTROL UNIT

CABLE (CATV) CHANNEL ASSIGNMENT TABLE

Channel number assignment for the cable tuning mode begins with 01 through 65, omits the unassigned numbers 66 through 93, then proceeds from 94 through 99. The specific channel number assignments and the corresponding alphabetical designation are shown below in the channel table.

	VHF L	MID		VHF H	SUPER	HYPER			UHF
TV	2 ~ 6	—		7 ~ 13	—	—			14 ~ 69
CATV	2 ~ 6 (STD)	A-6 (94)	A (14)	7 ~ 13	J (23) Q (30)	AA (37)	KK (47)	TT (56)	—
		A-5 (95)	B (15)		K (24) R (31)	BB (38)	LL (48)	UU (57)	
	1 ~ 6 (HRC)	A-4 (96)	C (16)		L (25) S (32)	CC (39)	MM (49)	VV (58)	
		A-3 (97)	D (17)		M (26) T (33)	DD (40)	NN (50)	WW (59)	
		A-2 (98)	E (18)		N (27) U (34)	EE (41)	OO (51)	XX (60)	
		A-1 (99)	F (19)		O (28) V (35)	FF (42)	PP (52)	YY (61)	
			G (20)		P (29) W (36)	GG (43)	QQ (53)	ZZ (62)	
			H (21)			HH (44)	RR (54)	AAA (63)	
			I (22)			II (45)	SS (55)	BBB (64)	
						JJ (46)		CCC (65)	

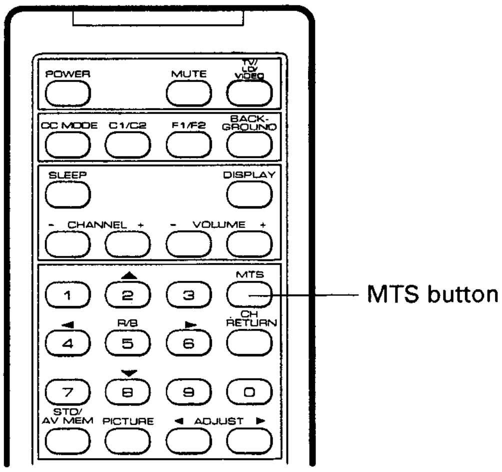
For example: Channel number "14" corresponds to mid-band cable channel "A".

NOTE:

Cable (CATV) services can vary from area to area. The channel number assignments shown in the channel table may not correspond with the channel numbers used by your local cable company. Direct tuning to cable channels without the use of the cable company "converter" or "preselector" will depend on the specific channels in use by the cable company. Direct tuning to cable channels is limited to unencoded (unscrambled) channels only. Check your local cable company compatibility requirements.

MULTICHANNEL TV SOUND (MTS)

A multichannel TV sound decoder is built into the Projection Monitor.
This MTS decoder permits stereo and SAP sound reception. (SAP is a "second audio program" often used for a second language.) The MTS decoder is only effective if the broadcast includes stereo or SAP signals.



STEREO RECEPTION

If necessary, use the remote control MTS button to switch to the MAIN setting. The setting will switch automatically between mono and stereo according to the signals received.

MONO RECEPTION

You can force monophonic reproduction of all programs by using the MTS button to select MONO.
If you hear a lot of static while receiving a stereophonic TV program, set the MTS mode to MONO by pressing the MTS button.

SAP (SECOND AUDIO PROGRAM) RECEPTION

TV stations have the option of broadcasting a second audio program (SAP) signal. This additional sound channel accompanies another mono signal or stereo signal. However, the SAP sound itself is in mono.

Use the MTS button to switch to the SAP or MAIN/SAP setting if you wish to hear the "second audio program" sound. (At the MAIN/SAP setting, the SAP sound will come from the right speaker while the left speaker produces the main sound signal.)
You will still hear stereo or mono sound when there is no SAP signal.

NOTES:

- *The MTS display is shown on the screen when the channel is tuned in, or the DISPLAY button on the remote control unit is pressed.*
- *Broadcast stereo and SAP reception operate in accordance with the Broadcast Television Systems Committee (BTSC) standards only. Stereo audio transmission from CATV (Cable television) systems can vary from area to area and may not be compatible with the BTSC standards. Check with your local cable company for specific compatibility requirements.*

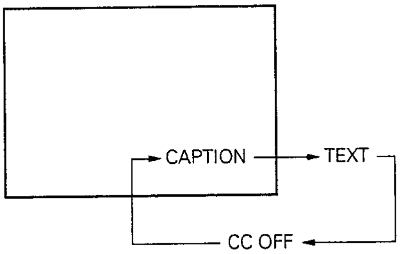
Audio Reception Mode Display (selected by the MTS button)

Mode Selected / Broadcasted mode		MONO	STEREO	MONO + SAP	STEREO + SAP
MAIN	**Display**	CH 00	CH 00 STEREO	CH 00 MAIN	CH 00 STEREO <SAP>
	REPRODUCTION Mode	MONO	L and R	MONO (MAIN)	L and R
SAP	**Display**	CH 00	CH 00 STEREO	CH 00 SAP	CH 00 SAP <ST>
	REPRODUCTION Mode	MONO	L and R	SAP	SAP
MAIN/SAP	**Display**	CH 00	CH 00 STEREO	CH 00 MAIN/SAP	CH 00 MAIN/SAP <ST>
	REPRODUCTION Mode	MONO	L and R	L: MONO (MAIN) R: SAP	L: MONO (MAIN) R: SAP
MONO	**Display**	CH 00 MONO	CH 00 MONO	CH 00 MONO	CH 00 MONO
	REPRODUCTION Mode	MONO	MONO	MONO (MAIN)	MONO (MAIN)

CLOSED CAPTION DECODE FUNCTION

The closed caption broadcasting multiplexes caption signals (character information) in the video signal to allow the displaying of characters on the screen. This unit incorporates a closed caption decoder which allows, from the remote control unit, to display character information when receiving character-multiplexed broadcasting (closed caption broadcasting) or playing a video cassette or LaserDisc carrying the CC mark etc.

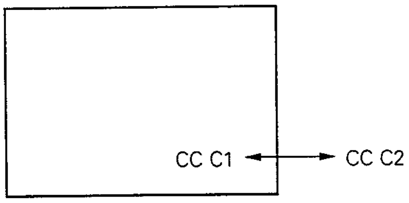
1. **Press the CC MODE button to select the closed caption mode.**


CAPTION
TEXT
CC OFF

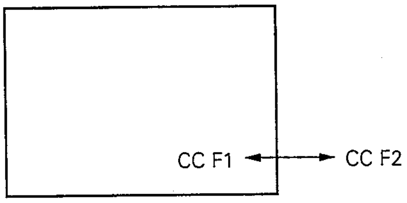
CAPTION mode: Displays subtitles of words, etc., superimposed on the picture.

TEXT mode: Displays character information all over the screen.

2. **Press the C1/C2 button to select channel 1 or 2.**



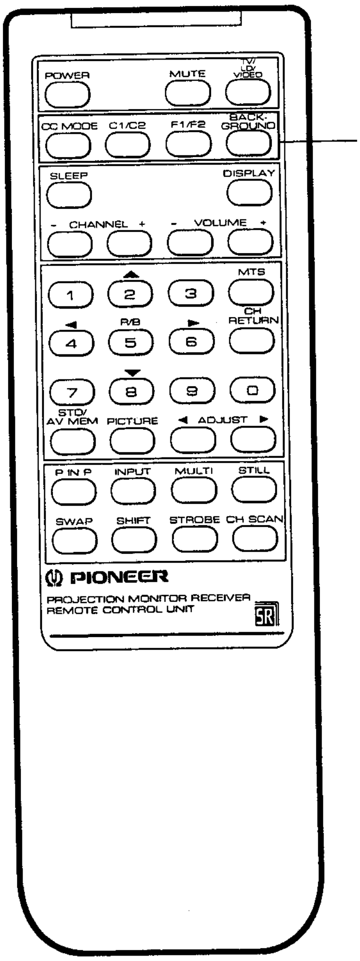
3. **Press the F1/F2 button to select field 1 or 2.**
   - The limited closed caption information is broadcasted in field 1 (at present 1993, July, 1).



4. **Press the BACKGROUND button to select whether the background of the character information is to be displayed on a black background or on the picture.**

NOTES:

- *When a video cassette or LaserDisc carrying the CC mark etc. is played, closed caption signal may not be output depending on the VCR or LD player model used. For details, please consult the manufacturer of your VCR or LD player.*
- *The Picture-in-Picture Multipicture, channel scan, still picture, Picture-in-Picture Strobe and Picture-in-Picture operations cannot be activated during the TEXT mode operation. When the Picture-in-Picture operations are performed during the TEXT mode, "TEXT" appears on the screen.*
- *If the PRESET menu is activated during the CAPTION or TEXT mode operation, the closed caption mode is turned off and the character information display disappears.*
- *If the Picture-in-Picture Multipicture, channel scan, still picture or Picture-in-Picture Strobe operation is activated during the CAPTION mode operation, the character information display disappears until the Picture-in-Picture Multipicture, channel scan, still picture or Picture-in-Picture Strobe operation is deactivated.*
- *During TV broadcast reception, closed caption signal may not be decoded properly if receiving broadcast signal is weak.*
- *Closed caption signal may not be decoded properly depending on the recording condition of a video cassette.*


POWER
MUTE
TV/LD/VIDEO
CC MODE
C1/C2
F1/F2
BACK-GROUND
SLEEP
DISPLAY
- CHANNEL +
- VOLUME +
MTS
1
2
3
R/B
CH RETURN
4
5
6
7
8
9
0
STD/AV MEM
PICTURE
◄ ADJUST ►
P IN P
INPUT
MULTI
STILL
SWAP
SHIFT
STROBE
CH SCAN
PIONEER
PROJECTION MONITOR RECEIVER
REMOTE CONTROL UNIT
SR

Closed Caption buttons

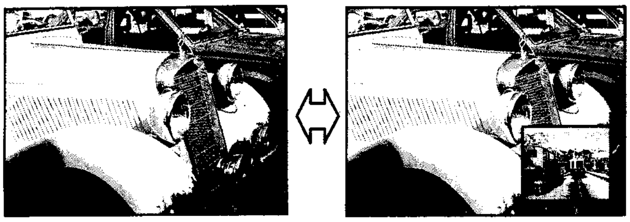
PICTURE-IN-PICTURE AND CHANNEL SCAN

Picture-in-Picture functions

Any one of the three sources connected to the Projection Monitor can be displayed simultaneously on a small area of the screen, while one of the other sources is being watched on the main screen.

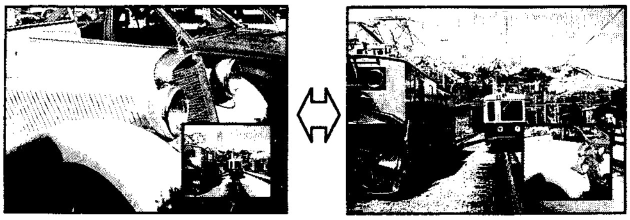
To turn the Picture-in-Picture function on and off

Press the P IN P button repeatedly to turn the subpicture on and off.



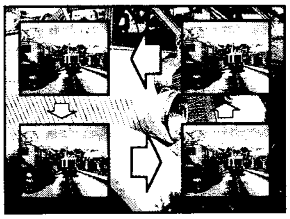
To replace the main screen picture with the subpicture

Press the SWAP button. Each time this button is pressed, the main screen and the subpicture will switch positions.



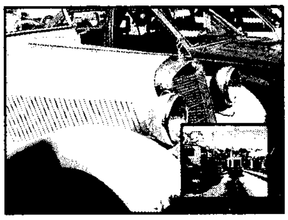
To change the position of the subpicture

Press the SHIFT button repeatedly. Each time this button is pressed, the subpicture will move (counterclockwise) to a different corner of the main screen.



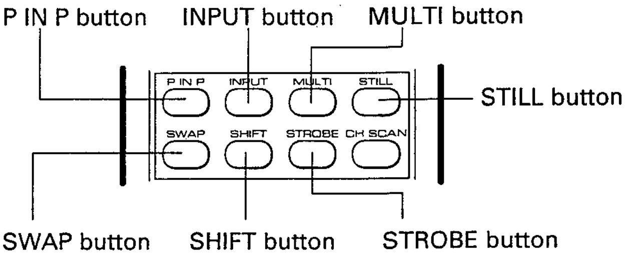
To select the input source of the subpicture while watching the main screen

When the INPUT button on the remote control unit is pressed, the selected video source for the subpicture will be displayed (i.e., videodisc playback, TV program or video cassette tape playback).



Subpicture input display

If subpicture input source is switched by INPUT button while in one-subpicture mode, the source will be displayed above (or below) the subpicture. Press the DISPLAY button to display the input source of the main picture in the upper right-hand corner of the screen. Subpicture input source will appear in the lower left corner of the screen.



To watch a still picture on the main screen

Press the STILL button to freeze the picture. The sound track will continue to play back normally, but the picture will freeze. If the button is pressed during Picture-in-Picture operation, the subpicture disappears.

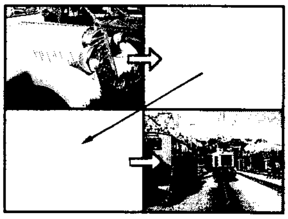
To cancel still or Picture-in-Picture function

Press the STILL button again. The screen will be reset to normal mode. Alternatively, press the P IN P button to cancel the Picture-in-Picture function.

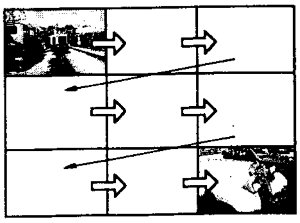
Picture-in-Picture function using the Multipicture feature

The multipicture feature can select 4-subpicture mode or 9-subpicture mode, and the strobe or manual features.

1. Press the P IN P button to turn the Picture-in-Picture function on.
2. Press the MULTI button repeatedly to select 1, 4 or 9 subpictures.
   When selecting 4-subpicture or 9-subpicture mode, the main screen will disappear and 4 or 9 subpictures will appear on the screen. The lower right-hand corner of the screen plays back normally. If the 1-subpicture mode is selected, the main screen will reappear.
3. Press the STROBE or SHIFT button.
   When the STROBE button is pressed, the picture will be displayed at specific intervals. At each interval, a still picture appears in one of the 4 (or 9) subpictures. The final screen picture plays back normally. Press the SHIFT button repeatedly if you wish to change the active subpicture's position. The subpicture selected most recently will play back normally.
4. To cancel the multipicture feature:
   Press the MULTI button. The main and subpicture will reappear. Alternatively, press the P IN P button to cancel the Picture-in-Picture function.



4-subpicture mode



9-subpicture mode

To display the picture of several television stations using the channel scan feature

The channel scan feature can display 4 or 9 television station pictures at the same time. The stations which have been memorized in the TV tuner will be displayed on the split screen.
All of the displayed pictures will appear as still images when the channel scan feature is engaged.

1. Press the TV/LD/VIDEO button on the remote control unit or the INPUT SELECTOR button on the Projection Monitor repeatedly until a TV program appears.
2. Press the CH SCAN button to display the first 4 stations on the screen. The memorized TV stations will appear in order from the top left corner to bottom right corner of the screen.
3. Press the MULTI button repeatedly to select 4- or 9-subpicture mode. The selected TV station will appear in the subpicture in the upper left corner of the screen.
4. To display the next group of memorized TV stations:
   Press the CH SCAN button again.
   Press the CH SCAN button repeatedly to select the memorized stations you wish to watch.
5. To cancel the channel scan feature:
   Press the CH RETURN button. The channel which has been viewed before channel scan will be displayed again.

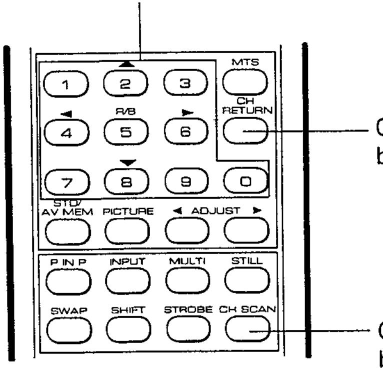
If you wish to select a station when the channel scan feature is engaged.

Press the direct channel selection pad you wish to select.
* Press the DISPLAY button to have channel numbers reappear on the screen.

NOTE:

In cases where the transmission from the broadcasting station has stopped or you have selected a channel without a broadcasting station, either a noise screen or the transmission of the last station received will appear on the screen, when channel scan feature is engaged.

Direct channel selection pad



CH RETURN button

CH SCAN button

ATTENTION

Do not use the Picture-in-Picture function for more than 2 hours. It may damage the picture tubes inside the Projection Monitor. If you wish to use this function for more than 2 hours, change the subpicture position on the screen every once in a while by pressing the SHIFT button.

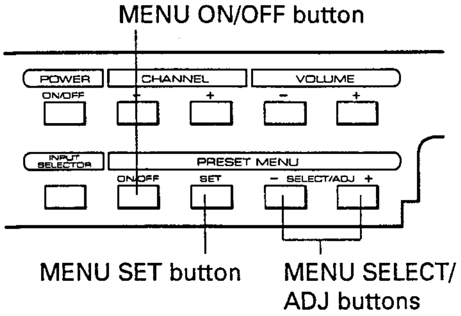
NOTES:

- *The sound of the subpicture(s) cannot be heard when the Picture-in-Picture system is engaged.*
- *When a copy-protected tape is played back in the main screen, the subpicture may be distorted.*
- *With some VCRs, the screen may fluctuate, when the VCR is not in playback mode. This is not a malfunction.*
- *TV channels can be selected with the CHANNEL +/– button or the direct channel selection pad when the selected video source is a TV program. Both the main screen and the subpicture will change TV channels at the same time when TV channels are selected.*
- *Signals output from the Projection Monitor will not be altered when the Picture-in-Picture function is engaged. Only the main picture signal is sent through the monitor output jacks.*
- *The Picture-in-Picture function will be cancelled automatically if no buttons are pressed for more than 8 minutes when in still mode, multimode or channel scan mode.*
- *If the input signal (including burst signal) is not supplied to the main screen, the Picture-in-Picture function will not function properly.*
- *During still playback, special effect playback, or when searching an LD or video cassette tape visually forward or backward using the main screen, shaking may occur in the subpicture.*
- *After the multipicture feature is engaged, input to the subpicture cannot be changed by pressing the INPUT button. If you wish to change the input, press the MULTI button to cancel the multipicture mode or select one-subpicture mode, and select the desired input source of the main screen. Then select the multipicture feature again.*
- *While Picture-in-Picture function is on, if main screen signal is cut, subpicture may disappear.*
  If main screen signal is supplied again, the original mode will be restored. Pictures appear on both the main screen and subpicture when the main screen signal is supplied.
- *If no TV program is received or picture is not clear, a black and white picture will appear in the subpicture when the CH SCAN button is pressed. If this happens, select a TV program tuned in clearly, then press the CH SCAN button.*
- *Channel scan feature can display only memorized TV stations which can be tuned using the TV tuner of the monitor.*
  If the RF terminal of the CATV converter is connected to the monitor, channel scan feature can display CATV converter selected stations only, not all the stations memorized in the CATV converter.

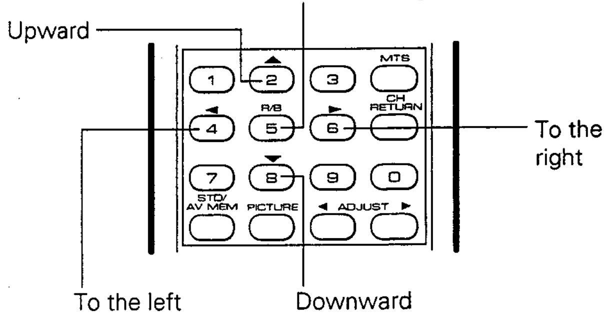
HOW TO ALIGN COLOR CONVERGENCE

This Projection Monitor uses three separate TV tubes - a red, a green, and a blue tube. The red, green and blue images are projected onto the screen where they converge to form a full color picture. If they do not converge correctly, then you will see colored borders around the images.
Your dealer should adjust the color convergence when your monitor is delivered. However, convergence may drift over time or if you move the monitor.
Follow the steps below if color convergence alignment is needed.

1. Turn on the power and select an active channel. Wait a moment for the picture to stabilize.
2. Press the MENU ON/OFF button on the control panel. The monitor screen displays the menu (CONVERGE, AV MEMORY, INPUT LABEL, TV-CATV MODE, and CHANNEL PRESET).
   Make sure that "CONVERGE" is displayed in purple. If not, press the MENU SELECT/ADJ buttons until "CONVERGE" turns purple.
3. Press the MENU SET button on the control panel. If color convergence is correct, there will be one vertical white line and one horizontal white line, as shown in Fig. 1.
4. If you see separate colored lines (Figs. 2 to 4), use the ⑤R/B, ④ ◄, ⑥ ►, ② ▲, and ⑧ ▼ buttons on the remote control unit to make the red and blue lines disappear into the other lines.
   Each time the ⑤R/B button is pressed, the line to be controlled (red or blue) alternates.
   Pressing the ④ ◄ button moves the vertical line to the left, while pressing the ⑥ ► button moves the vertical line to the right.
   Pressing the ② ▲ button moves the horizontal line upward, while pressing the ⑧ ▼ button moves the horizontal line downward.
   In Fig. 2, for example, press the ⑤R/B button to control the red line, and then press the ④ ◄ button until the red line converges.
   Press the ⑤R/B button again to control the blue line, and then press the ⑧ ▼ button until the blue line converges. Convergence is correct when all three colors (red, green, and blue) converge, producing single white lines.
5. Press the MENU ON/OFF button when convergence is correct.


MENU ON/OFF button
POWER
ON/OFF
CHANNEL
VOLUME
INPUT SELECTOR
PRESET MENU
ON/OFF
SET
− SELECT/ADJ +
MENU SET button
MENU SELECT/
ADJ buttons

Each time the ⑤R/B button is pressed the line (red or blue) to be controlled changes alternately.


Upward
To the right
To the left
Downward
1
2
3
MTS
R/B
CH RETURN
4
5
6
7
8
9
0
STD/ AV MEM
PICTURE
◄ ADJUST ►

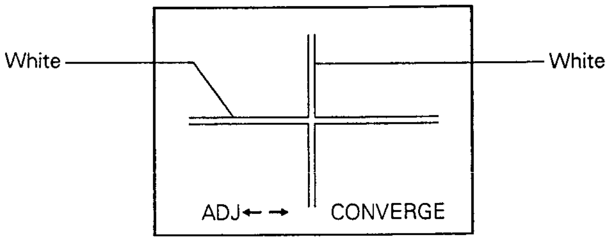

White
White
ADJ←→
CONVERGE

Fig. 1 Correctly aligned

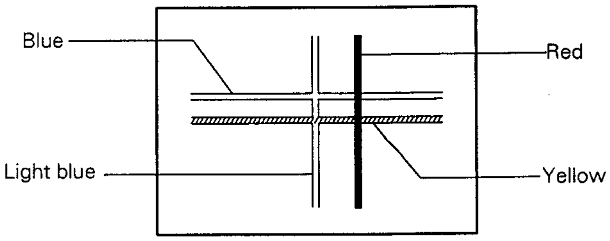

Blue
Red
Light blue
Yellow

Fig. 2 Horizontal and vertical misalignment

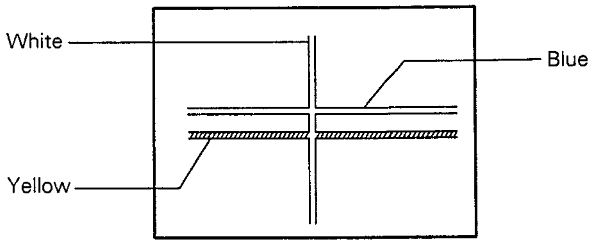

White
Blue
Yellow

Fig. 3 Vertical misalignment

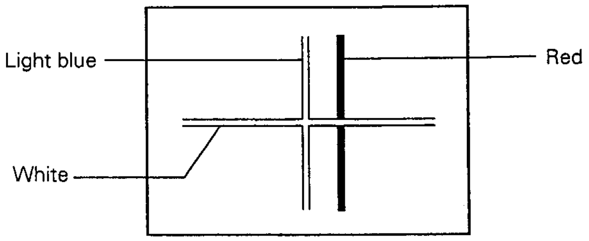
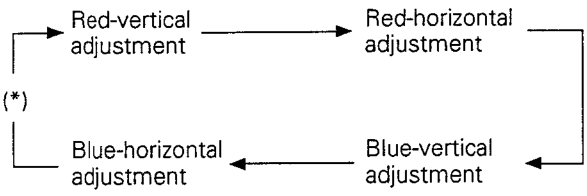

Light blue
Red
White

Fig. 4 Horizontal misalignment

Color convergence alignment without using the remote control unit

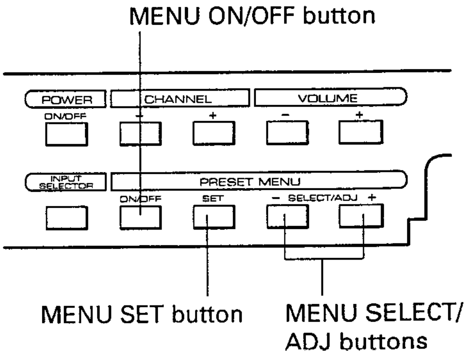
Color convergence adjustment can be performed with either the operation buttons of the remote control unit as described in operation 4 of the above procedures, or the MENU SELECT/ADJ buttons and MENU SET button on the control panel as described below:

① **Press the MENU SET button to select the adjustment mode.**
The adjustment modes appear in the following order:
- Convergence adjustment test pattern and arrow will appear on the screen accordingly.


Red-vertical adjustment
Red-horizontal adjustment
(*)
Blue-horizontal adjustment
Blue-vertical adjustment

* Alignment proof mode; selected image only appears.

② **Use the SELECT/ADJ buttons as follows:**
During Red or Blue Vertical adjustment
Press the + button to move the horizontal line upwards.
Press the – button to move the horizontal line downwards.
During Red or Blue Horizontal adjustment
Press the + button to move the vertical line to the right.
Press the – button to move the vertical line to the left.


MENU ON/OFF button
POWER
ON/OFF
CHANNEL
+
+
VOLUME
–
+
INPUT SELECTOR
PRESET MENU
ON/OFF
SET
– SELECT/ADJ +
MENU SET button
MENU SELECT/ ADJ buttons

HOW TO ALIGN COLOR CONVERGENCE

Notes for the convergence alignment adjustment

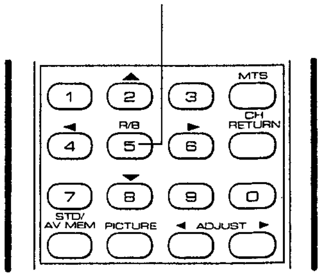
By repeatedly pressing the ⑤R/B button or the MENU SET button when the convergence alignment adjustment is engaged, a selected image can be displayed on the screen instead of the alignment cross pattern.
This is the alignment proof mode, which allows you to check the center of the images to ensure that colored borders are not seen after the adjustment.
In the alignment proof mode the alignment can also be adjusted by pressing the ②, ④, ⑥ and ⑧ buttons or pressing the MENU SELECT/ADJ button. However, it is difficult to adjust the alignment properly when only the image appears on the screen.
If you can still see colored borders around the images, press the ⑤R/B button or the MENU SET button again until the proper convergence alignment pattern reappears, and adjust the alignment by following the operations described on the previous page.
After all convergence alignment adjustments are finished, press the MENU ON/OFF button to set the monitor to its normal mode.

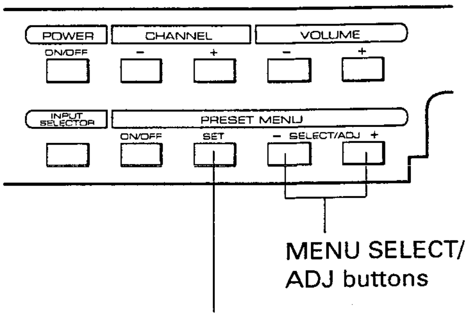
Each time the ⑤R/B button is pressed, the alignment adjustment mode will change as follows:

Red (Alignment pattern appears) → **Blue** (Alignment pattern appears) → **Red** (Selected image only appears) [Alignment proof mode] → **Blue** (Selected image only appears) [Alignment proof mode] → **Red** (Alignment pattern appears)

Convergence alignment adjustments can be performed by pressing the ②, ④, ⑥ and ⑧ buttons on the remote control unit after the alignment mode is selected.

R/B button





MENU SELECT/ ADJ buttons

MENU SET button

Each time the MENU SET button is pressed, the alignment adjustment will change as follows:

Red-vertical adjustment (Alignment pattern appears) — Red-horizontal adjustment (Alignment pattern appears) — Blue-vertical adjustment (Alignment pattern appears) — Blue-horizontal adjustment (Alignment pattern appears) — Red-vertical adjustment (Select image only appears) [Alignment proof mode] — Red-horizontal adjustment (Select image only appears) [Alignment proof mode] — Blue-vertical adjustment (Select image only appears) [Alignment proof mode] — Blue-horizontal adjustment (Select image only appears) [Alignment proof mode] — Red-vertical adjustment (Alignment pattern appears)

Convergence alignment adjustment can be performed by pressing the MENU SELECT/ADJ button on the front panel after the alignment mode is selected.

CHANNEL PRESET

You can customize this special tuning system so that it will select only your personal choice of channels. When the Projection Monitor leaves the factory, all possible channels are in CHANNEL PRESET.
Using the menu function you can add or delete channels to or from CHANNEL PRESET to suit your tastes.
CHANNEL PRESET can be set to match your personal preferences among the channels available in your area. Please refer to your local TV or cable program guide. Follow the procedures below to customize CHANNEL PRESET to your requirements.

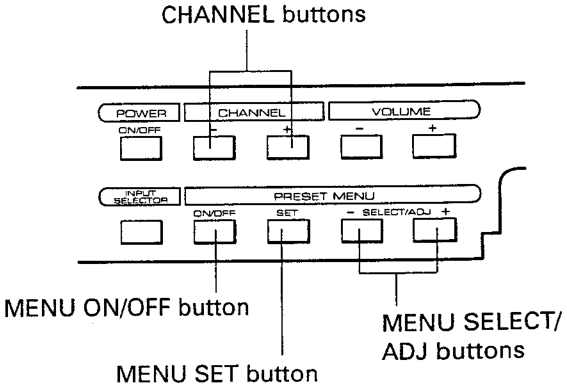
Removing channels from CHANNEL PRESET

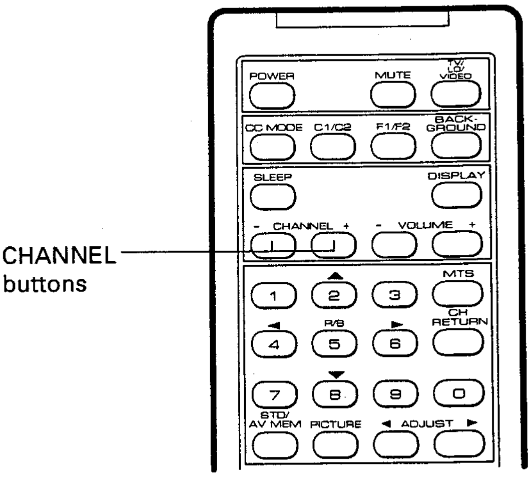
1. Turn on the monitor and set the input selector to TV mode.
2. Press the MENU ON/OFF button to turn on the menu function, and press the MENU SELECT/ADJ buttons until the CHANNEL PRESET display turns purple.
3. Press the MENU SET button. The channel numbers appear on the screen.
4. Press the MENU SELECT/ADJ buttons until the channel number to be deleted blinks (the preset channel numbers are displayed in green).
5. Press the MENU SET button to delete the currently selected channel from CHANNEL PRESET. The blinking number turns red. The red numbers show the deleted channel numbers.
6. Repeat steps 4 and 5 to delete additional undesired channels.
7. Press the MENU ON/OFF button after presetting is completed.

Adding channels to CHANNEL PRESET

1. Turn on the monitor and set the input selector to TV mode.
2. Press the MENU ON/OFF button to turn on the menu function, and press the MENU SELECT/ADJ buttons until the CHANNEL PRESET display turns purple.
3. Press the MENU SET button. The channel numbers appear on the screen.
4. Press the MENU SELECT/ADJ buttons until the channel number to be added blinks (the deleted channel numbers are displayed in red).
5. Press the MENU SET button to add the currently selected channel to CHANNEL PRESET. The blinking number turns green. The green numbers show the added channel numbers.
6. Repeat steps 4 and 5 to add additional desired channels.
7. Press the MENU ON/OFF button after presetting is completed.

Now you can recall the preset channels by pressing the CHANNEL "+" and "–" buttons on the remote control unit or control panel.


CHANNEL buttons
POWER
ON/OFF
CHANNEL
–
+
VOLUME
–
+
INPUT SELECTOR
PRESET MENU
ON/OFF
SET
– SELECT/ADJ +
MENU ON/OFF button
MENU SET button
MENU SELECT/ ADJ buttons


CHANNEL buttons
POWER
MUTE
TV/ LD/ VIDEO
CC MODE
C1/C2
F1/F2
BACK-GROUND
SLEEP
DISPLAY
- CHANNEL +
- VOLUME +
1
2
3
MTS
4
R/B
5
6
CH RETURN
7
8
9
0
STD/ AV MEM
PICTURE
◄ ADJUST ►

Other memory features

The Projection Monitor also remembers many other settings related to day-to-day operation. So when you turn the monitor on, it comes up with your previous channel and volume settings. It also remembers your previous picture quality settings.

PICTURE ADJUSTMENT

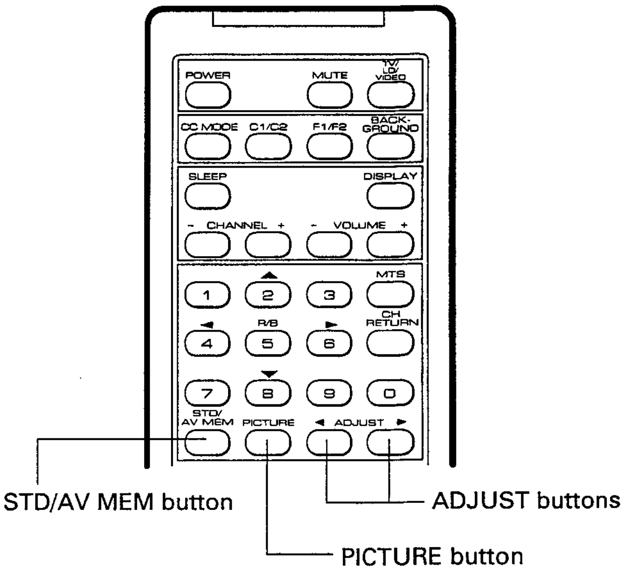
The remote control unit has a PICTURE button. This button allows you to adjust color, tint, contrast, brightness and sharpness.

1. Press the PICTURE button until the item to be adjusted turns purple.
2. Press the ADJUST ► button to raise the value of the selected item. Press the ◄ button to lower it.

Set each item to any value you like; the current value is shown on the screen.
Picture adjustment mode will be cancelled approx. 2 seconds after the ADJUST ► or ◄ button is released.

NOTES:

- *The Projection Monitor has been adjusted before shipping. Please make additional adjustments to suit your personal taste.*
- *These picture quality settings can be stored in the AV MEMORY preset memory. See AV MEMORY on page 27.*
- *To return to the standard settings initially set at the factory simply press the STD/AV MEM button so that the screen shows STANDARD. (In the GAME POSITION mode, press the STD/AV MEM button twice to switch the picture settings.)*


POWER
MUTE
TV/LD/VIDEO
CC MODE
C1/C2
F1/F2
BACK-GROUND
SLEEP
DISPLAY
- CHANNEL +
- VOLUME +
MTS
1
2
3
R/B
CH RETURN
4
5
6
7
8
9
0
STD/AV MEM
PICTURE
◄ ADJUST ►

STD/AV MEM button

ADJUST buttons

PICTURE button

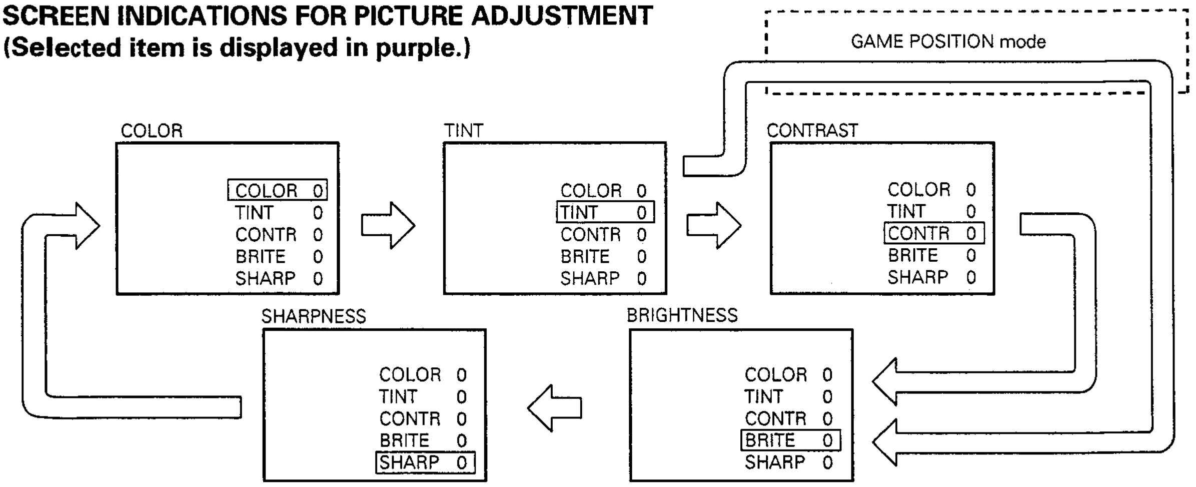
GAME POSITION

Set the picture settings to GAME POSITION to minimize adversely affection to the Monitor's CRT when displaying still images such as computers, television programming logos and video games for a long period of time.

Temporary AV Memory recall

When the display disappears from the screen, the existing AV settings will be stored in the temporary memory mode. In this mode, the monitor's temporary AV memory settings will be restored when the power is turned on.
(This function cannot be carried out in the GAME POSITION mode.)

SCREEN INDICATIONS FOR PICTURE ADJUSTMENT (Selected item is displayed in purple.)


GAME POSITION mode
COLOR
COLOR 0
TINT 0
CONTR 0
BRITE 0
SHARP 0
TINT
COLOR 0
TINT 0
CONTR 0
BRITE 0
SHARP 0
CONTRAST
COLOR 0
TINT 0
CONTR 0
BRITE 0
SHARP 0
SHARPNESS
COLOR 0
TINT 0
CONTR 0
BRITE 0
SHARP 0
BRIGHTNESS
COLOR 0
TINT 0
CONTR 0
BRITE 0
SHARP 0

NOTES:

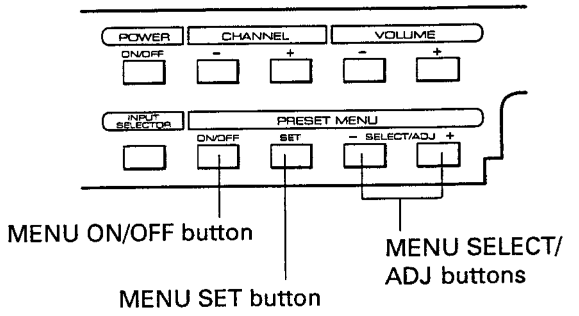
- *If the color seems abnormal but cannot be fixed by color or tint adjustment, you may need to align the color convergence (see page 22).*
- *During the AV memory operation, 'STD', 'AV1', 'AV2' or 'GAME' will be shown on the left side of the screen. When the picture quality control is adjusted, these displays will disappear from the screen.*
- *The CONTR (contrast) cannot be adjusted in the GAME POSITION mode.*

AV MEMORY

After making adjustments, you can store your picture quality settings in the two AV MEMORY presets. Follow the procedure below.

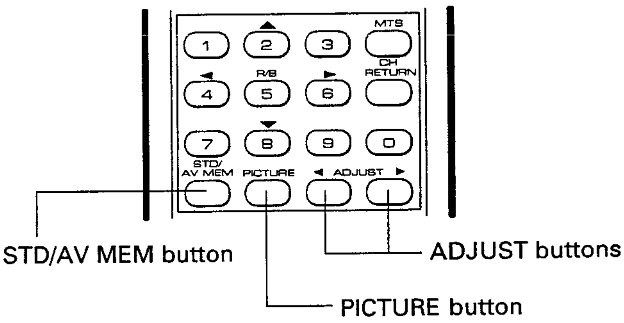
Storing a Setting

1. Watch a TV show, video tape, or video disc.
2. Adjust the picture using the PICTURE button and ADJUST buttons.
3. Press the MENU ON/OFF button to display the MENU, and press the MENU SELECT/ADJ buttons until the AV MEMORY display turns purple.
4. Press the MENU SET button.
5. Press the MENU SELECT/ADJ button to select the AV memory (AV MEMORY 1 or AV MEMORY 2) in which the setting is to be stored. The unlocked display (🔓) will appear on the screen next to the selected AV MEMORY.
6. Press the MENU SET button to store the settings in AV memory. Upon completion of memory storage, the locked display (🔒) appears on the screen.
7. Press the MENU ON/OFF button to return to normal operation.


POWER
ON/OFF
CHANNEL
- +
VOLUME
- +
INPUT SELECTOR
PRESET MENU
ON/OFF
SET
- SELECT/ADJ +
MENU ON/OFF button
MENU SET button
MENU SELECT/ ADJ buttons

Recalling Setting

Press the STD/AV MEM button on the remote control unit. Each press of the STD/AV MEM button moves the selection from STANDARD to AV MEMORY 1, to AV MEMORY 2, to GAME POSITION, display off and then back to STANDARD again.
(Press the button while the previous legend is still on the screen, otherwise, it will return to the STANDARD setting. In the GAME POSITION mode, press the STD/AV MEM button twice to switch the picture settings. (If the button is pressed once, only "GAME POSITION" appears on the screen.))

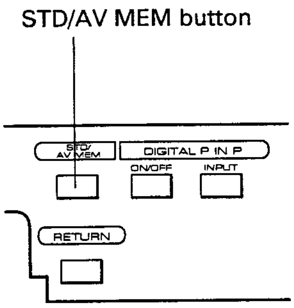

MTS
1
2
3
CH RETURN
R/B
4
5
6
7
8
9
0
STD/ AV MEM
PICTURE
◄ ADJUST ►
STD/AV MEM button
ADJUST buttons
PICTURE button

Returning to the Standard Setting

Press the STD/AV MEM button so that the screen shows STANDARD.
(In the GAME POSITION mode, press the STD/AV MEM button twice to switch the picture settings. (If the button is pressed once, only "GAME POSITION" appears on the screen.))

Recalling a Setting with the STD/AV MEM Button on the Control Panel

Press the STD/AV MEM button repeatedly to recall a setting, as described above for the remote control operation buttons.


STD/AV MEM button
STD/ AV MEM
DIGITAL P IN P
ON/OFF
INPUT
RETURN

NOTE:
All signals output from the Projection Monitor will be unaffected. Only the original output signal is sent through the monitor output jacks.

AV Memory Assignment

AV memory can be assigned to a selected input source: TV, LD or VIDEO. For example, the AV memory settings for TV can be stored in the STANDARD mode, LD settings in AV MEMORY 1 and VIDEO settings in AV MEMORY 2. Press the input selector button repeatedly to select the desired input source, then press the STD/AV MEM button repeatedly to recall the desired settings.

HOW TO RELABEL INPUT DISPLAYS

The input label function can be used to replace the input displays, such as LD or VIDEO, with the model numbers or model names of the components that are connected to the monitor. For example, you can display 'LD-S2' on the screen when selecting the LD input source. The input label can be up to 8 characters long using the 43 characters, including _ (space), listed below.

1. Turn on the monitor and select the input (LD or VIDEO) that you wish to replace with the model number of the unit connected to the monitor.
   Example: Replacing the LD display with model number 'LD-S2'.
2. Press the MENU ON/OFF button, and then press the MENU SELECT/ADJ buttons until the INPUT LABEL display turns purple.
3. Press the MENU SET button. 'LD' will appear in the right-hand corner of the screen.
4. Press the MENU SELECT/ADJ buttons to select the desired character.
   * Press the + or – button repeatedly until the desired character appears.
5. Press the MENU SET button to set the selected character.
6. If you wish to select additional characters, repeat steps 4 and 5.
7. Press the MENU ON/OFF button once when you finish replacing the input labels.

Now you can display the model number by pressing the remote control TV/LD/VIDEO button or the control panel INPUT SELECTOR button.

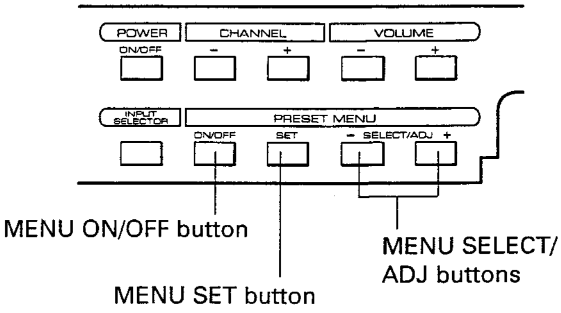
NOTES:

- *The following 43 characters, including _ (Space), can be selected.*

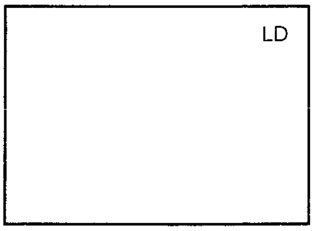
  ABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789:<>-.,_

  Space

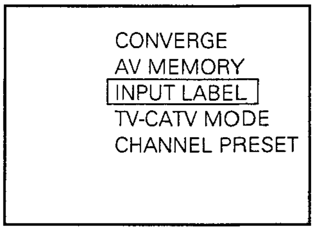
- *Be sure to press the MENU SET button after selecting the character.*


POWER
ON/OFF
CHANNEL
–
+
VOLUME
–
+
INPUT SELECTOR
PRESET MENU
ON/OFF
SET
– SELECT/ADJ +
MENU ON/OFF button
MENU SET button
MENU SELECT/ADJ buttons

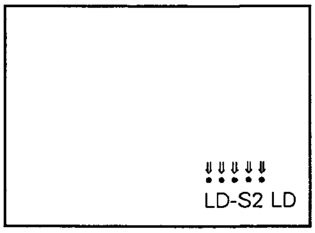
1



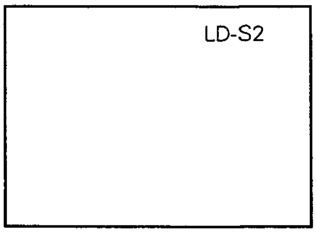
2


CONVERGE
AV MEMORY
INPUT LABEL
TV-CATV MODE
CHANNEL PRESET

3 4 5 6



7



TROUBLESHOOTING

Please check the following chart and try the suggested solutions before consulting a PIONEER authorized service center. Often you can fix the problem by making a simple adjustment on the Projection Monitor. Faulty connections may be to blame, or it may be another piece of equipment that is causing the trouble.

SYMPTOM	POSSIBLE CAUSE AND SUGGESTED SOLUTION
NO PICTURE	AC power cord is not plugged into the wall socket. **Plug in the AC power cord.** Power switch is off. **Turn on the power switch on the Projection Monitor, or turn on the POWER button on the remote control unit.** Selected video signal source is not connected to input jacks, or source component (VCR, etc.) is not turned on or is not providing a signal. **Check connections and source unit operation.**
COLOR IS WASHED OUT	Color value is too low. **Use the PICTURE button and ADJUST buttons to increase COLOR value.** Brightness value is too high. **Use the PICTURE button and ADJUST buttons to reduce BRITE (Brightness) value.**
COLOR TINT IS WRONG	Tint value is too high or low. **Use the PICTURE button and ADJUST buttons to adjust TINT value.**
STATIC IN TV PICTURE	Interference from motor vehicles, neon signs, etc. **Try changing the height or direction of the TV antenna. Move the antenna away from the source of interference.**
GHOSTING ON SCREEN	This "multipath" distortion is caused when the TV signal is received along two paths, directly and after being reflected from tall buildings, mountains or other obstacles. Strong winds may have changed the direction of the TV antenna. **Try changing the height or direction of the antenna. An antenna with better directional characteristics may be required.**
COLORED STRIPES ON SCREEN	Interference from other radio or TV signals. **Try changing the height or direction of the antenna. Try changing to a coaxial antenna cable. Coaxial cable is shielded to minimize pickup of interfering signals.**
COLORED EDGES ON IMAGES	Color convergence needs adjustment. **Tune in a channel, select CONVERGE from among the menu items and adjust using the convergence controls on the remote control unit (see page 22 for details).**
UNCLEAR PICTURE	Connections are loose or cables are damaged. **Check connections and try using new cables.** Antenna may be damaged. **Check antenna.**
POOR PICTURE OR COLOR QUALITY	Interference from a nearby speaker or other source of magnetism. **Move source of interference away from the monitor.**
NO SOUND	The MUTE button is ON. (The volume level display turns red.) **Set the MUTE button to OFF.**
NO ON-SCREEN CHANNEL OR OTHER DISPLAY; SLEEP TIMER DOES NOT OPERATE	Strong light striking the remote control sensor may cause the internal microcomputer to malfunction. **Change the position of the Projection Monitor or change the lighting so that the sensor is not exposed to strong light sources.**

- *Abnormal functioning of this monitor may be caused by lightning, static electricity, or other external interference. To restore normal operation, turn the power off and then on again, or unplug the AC power cord and then plug it in again.*
- *With some VCRs, when the VCR is not in play mode, the screen sometimes fluctuates. This is not a malfunction.*

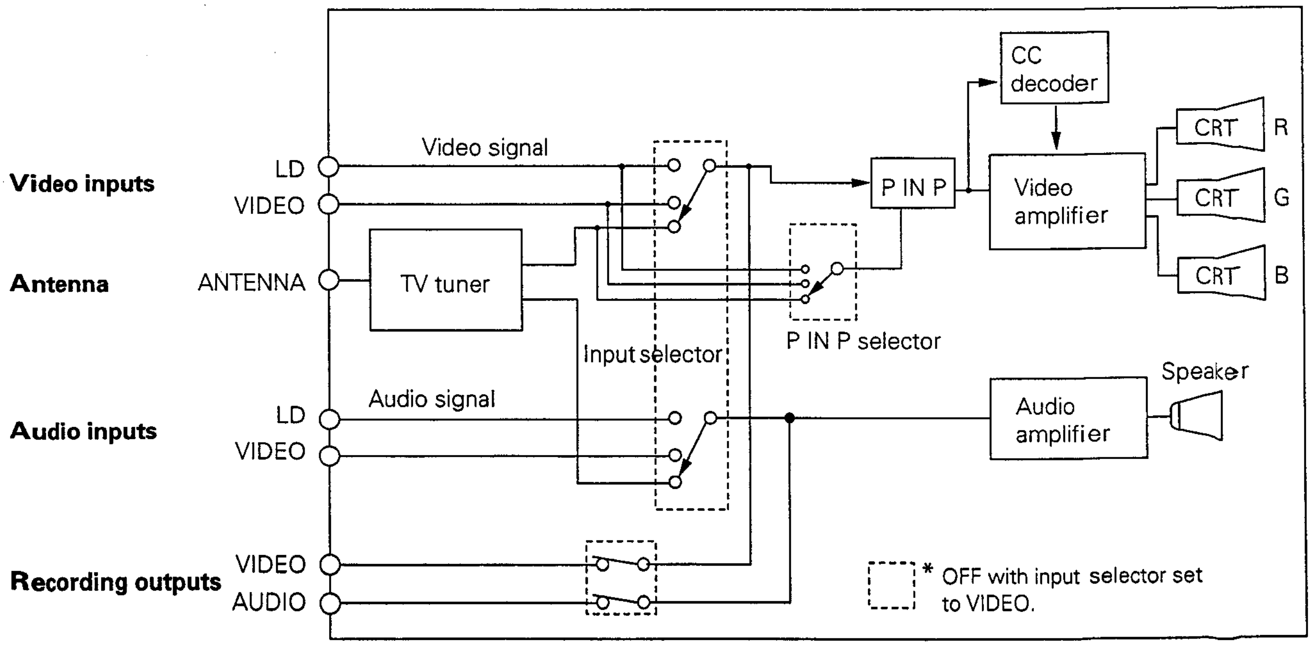
SYMPTOM	POSSIBLE CAUSE AND SUGGESTED SOLUTION
CLOSED CAPTION IS NOT DISPLAYED.	Check the CC channel and field settings. (At present 1993, July, 1, limited closed caption information is broadcasted in field 1. The closed caption information that will be broadcasted in field 2 in the future may not be decoded with this unit.) The character information is not displayed normally during special playback, such as slow and still play, of the VCR or LD player. Closed caption signal may not be output depending the VCR, LD player or other components. (For details, please consult the manufacturer of your unit.) Check that the video cassette, LaserDisc or broadcasting being played contains closed caption data. (The video cassette and LaserDisc containing closed caption data carries the CC mark etc.)

CARE OF YOUR PROJECTION MONITOR

DO NOT:
- Do not use strong cleansers, solvents, polishes, or chemically treated cloths to clean the screen or cabinet.
- Do not touch or scratch the screen.
- Do not fasten or place rubber or vinyl items on the monitor.
- Do not use tape on the monitor.
- Do not put any object on the monitor.

DO:
- Use a soft cloth to dust the screen and cabinet.
- If necessary, unplug the monitor and wipe with a soft cloth moistened with warm water (and mild soap if dirt has built up). Dry with a soft, dry cloth.
- Treat the screen with care to avoid scratches or damage.
- Ask your local dealer to clean the interior of the monitor if maximum picture brightness decreases. This may be caused by dust buildup inside.

BLOCK DIAGRAM


Video inputs
LD
VIDEO
Antenna
ANTENNA
TV tuner
Audio inputs
LD
VIDEO
Recording outputs
VIDEO
AUDIO
Video signal
Audio signal
Input selector
P IN P selector
P IN P
CC decoder
Video amplifier
CRT R
CRT G
CRT B
Speaker
Audio amplifier
* OFF with input selector set to VIDEO.

SPECIFICATIONS

DISPLAY SECTION

Reception system....... American TV standard NTSC system
Screen size.. 50" (SD-P5071)
45" (SD-P4571)
CRT .... 7" High focus CRT x 3
Brightness (White peak) .... 520 Foot-Lambert (SD-P5071)
640 Foot-Lambert (SD-P4571)
[100 % Window signal input contrast, bright Max.]
Actual viewing angle............................. Horizontal H = 140°
Vertical V = 45°
Horizontal resolution .... 830 lines (SD-P5071)
770 lines (SD-P4571)
[Input digital test pattern (900 lines resolution)]
Input terminals .... 2 video input systems,
2 audio input systems
Output terminals .... REC OUTPUT (To VIDEO);
Video output, audio output (For recording) x 1
Input signal............................. Video signal: 1.0 Vp-p ± 0.2 V
(75 ohms load)
Audio signal: 500 mV rms
Input impedance .... Video input: 75 ohms ± 10 %
Audio input: 22 kilo-ohms or more
Input signal polarity .... Synchronized negative
Output terminal signal ratings:
  Output terminals
  (VIDEO)..................... Video signal: 1 Vp-p (75 ohms load)
Audio signal: 500 mV rms (100 % modulation)
  Output impedance .... Video output: 75 ohms ± 10 %
Audio output: Less than 1 kilo-ohms

TUNER SECTION

Circuit type....................................... Video signal detection:
PLL full synchronous detection
PLL Digital Synthesizer system
Audio multiplex: BTSC system
Reception channels .... VHF; CH2~CH13, UHF; CH14~CH69
CATV (STANDARD, AIR or HRC switchable)
CATV A-6 CH~CCC (W+29) CH
Antenna terminals .... ANTENNA terminal, 75 ohms UNBAL,
F-type connector (VHF, UHF MIXED)

AMPLIFIER SECTION

Effective output
  both channels driven..................................... 2 W + 2 W
(THD. 1.5 % 50 Hz to 15,000 Hz, 8 ohms)
Built-in speaker system ...... 10 cm (3-15/16 in) full range x 2

ELECTRICAL SECTION, MISCELLANEOUS

Power requirements .... 120 V AC, 60 Hz
Power consumption............................ 240 W, 500 VA (CSA)
External dimensions
  SD-P5071 .... 1240 (W) x 655 (D) x 1302 (H) mm
48-13/16 (W) x 25-13/16 (D) x 51-1/4 (H) inch
  SD-P4571 .... 1134 (W) x 625 (D) x 1232 (H) mm
44-5/8 (W) x 24-5/8 (D) x 48-1/2 (H) inch
Weight of main unit
  SD-P5071 .... 98 kg (216 lb 1 oz)
  SD-P4571 .... 89 kg (196 lb 3 oz)

WIRELESS REMOTE CONTROL UNIT

Operation system:............... Infrared remote control system
Power source: .... Two DURACELL® "AA" MN1500 1.5V
alkaline dry cell batteries
Dimensions: .... 60 (W) x 18 (H) x 190 (D) mm
2-23/64 (W) x 23/32 (H) x 7-31/64 (D) inch
Weight:.................................. 88 g (3 oz) (without batteries)

ACCESSORIES

Operating instructions.. 1
Warranty card... 1
Remote control unit 1
DURACELL® "AA" MN1500 1.5V alkaline
  dry cell batteries 2
Important Safeguards card... 1

NOTE:
Specifications and design subject to possible modifications without notice due to improvements.